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An Address
ON
LIFE ASSURANCE MEDICINE:
ITS PROGRESS AND ITS LIMITATIONS.

Read to the Assurance Medical Society on Jan. 6th, 1926,

BY OTTO MAY, M.D. CAMB., M.R.C.P. LOND.,
PRESIDENT OF THE SOCIETY; PRINCIPAL MEDICAL OFFICER, PRUDENTIAL ASSURANCE COMPANY.

MY predecessor in the chair, Dr. G. G. Howitt, in his extremely interesting presidential address, reminded us how, almost imperceptibly, medical men came to be associated with the business of life assurance. Their first appearance was in the capacity that we now speak of as the "private medical attendant"; later arose the "medical directors," and still later, the actual examiners. In the early days of their association, the function of the examiners, broadly speaking, was to protect the company from the risk of adverse selection—to ensure that the proposers represented, as regards health, an average "cross-section" of the community. Later, however, it was gradually realised that life assurance could be placed on a broader basis than this, that it could be extended to cover lives impaired to almost any extent, provided that there was some prospect of survival for a reasonable period. Consequently upon this widening of the portals the responsibilities of the medical examiner became increasingly heavier. It was no longer a question merely of advising acceptance or rejection of a proposal; it involved, in the case of an "impaired life," the investigation of the nature and extent of the impairment, and, as a corollary, the attempt to estimate the effects of the impairment on the prospects of longevity.

The rapid advance, real or apparent, during the last 30 years in clinical, and particularly in laboratory, methods for the investigation of bodily function has resulted in striking changes in our outlook on the significance of various impairments, and I think it is not without interest to discuss in what directions, if at all, we can show any real advance since the foundation of the Society in 1894.

There are some, particularly the more juvenile among us, who are apt to assume that all change is progress, that we are moving forward in a direct line from darkness towards the light, and that each new "discovery" is a milestone on the road to the omniscience to which we all aspire. Would that it were so! But when I look through the early volumes of our transactions, when I see the wealth of clinical knowledge and shrewd judgment displayed in the papers read at those early meetings, I have an uneasy feeling that, in many respects, our progress has been more apparent than real, and that the elaboration of methods has proved by no means an unequivocal blessing.

LIMITATIONS OF THE LIFE INSURANCE EXAMINATION.

It is perhaps true that, were one able to command for life insurance work all the resources of the modern hospital or clinic, we might well be able to arrive at a better estimate of the proposer's condition than was possible 30 years ago. But life assurance is essentially a business proposition, not an exercise in the niceties of modern laboratory methods. In practice the examination of the proposer is limited by two factors—the extent to which he will submit to the trouble and expenditure of time involved, and the amount of cash outlay which the Company is prepared to sanction for this purpose.

As regards the first of these factors, if the proposer is really anxious to be insured, he will doubtless be ready to fall in with any reasonable suggestions for special methods of investigation; but if, as is so often the case, he is indifferent as to the outcome, the difficulty of inducing him to submit to such tests as, e.g., that of his sugar-tolerance curve, is obvious.

As regards the second point—the expense of special investigations—it is equally obvious that a company will hesitate to sanction the outlay of several guineas instead of the usual guinea except in the case of proposals for large amounts; in the case of doubtful proposals for smaller sums, they will prefer either to decline it outright or to come to a decision on such information as is contained in the ordinary report. It follows, therefore, that in the large majority of proposals a decision has to be reached on the findings of the ordinary clinical examination, and it is at least arguable that in this respect the modern practitioner is less, rather than more, skilled than his predecessor of 30 years ago—as a result of dependence on laboratory methods, which, in this case, are unavailable.

Having, I trust, disarmed criticism by this tribute to the virtues of the "nineties," and this confession of our own lamentable shortcomings, I may nevertheless, in all humility, suggest that modern methods may be to some extent helpful in our work. And were I asked to specify one particular point in routine examination in which we have really advanced during the period under review, I should unhesitatingly single out the measurement of arterial pressure.

ARTERIAL PRESSURE.

The introduction of the sphygmometer into clinical medicine has been, in my opinion, one of the few real diagnostic and prognostic advances of recent years. From the point of view of prognosis, I regard it as the most important single item in our scheme of examination, and trust that the time will soon arrive when the measurements of both systolic and diastolic pressure by the auditory method will become an essential part of every life assurance examination.

It is sometimes said that the finger is the best judge of high tension, and that instruments are unnecessary or even misleading. Dr. W. Russell, of Edinburgh, has always maintained that a good deal of the pressure of the armlet may be required to overcome the resistance of a thickened or tonically-contracted artery, and that the reading is by so much greater than the real systolic blood pressure. The great majority of workers on this problem have, however, satisfied themselves that any error due to this cause does not exceed 5–10 mm. Hg, an error which is negligible compared with those arising from attempts to estimate the pressure by digital palpation alone.

Up to the present, my Company has refrained from asking for the *diastolic pressure*, as it is unlikely that the measurements would be of a sufficient degree of accuracy to be of any real value. But when the auditory method of estimating the pressure becomes more widely used among practitioners, I intend to recommend that both the systolic and diastolic pressures should be required of the examining doctor. In the course of a few years this would enable us to amass a large quantity of statistical material which should furnish results of considerable interest as to the relation of diastolic pressure to mortality.

At the beginning of 1920 my Company adopted a system of coding various facts with regard to each policy issued in its Ordinary branch by means of cards punched and sorted by the "Powers" tabulating machines. One of the items thus codified is "systolic arterial pressure"; on the policy card is recorded whether or not the pressure was measured, and, if measured, whether it was (*a*) below 140 mm.; (*b*) 141–170 mm.; (*c*) above 170 mm. No one realises more than I do the possible fallacies attending a single measurement of the pressure by one of several thousand referees, varying widely in skill and care, and using instruments varying almost equally widely in accuracy. But as the number of cases investigated increases, the importance of individual errors becomes correspondingly less, and the number of our cases is so great as largely to eliminate the fallacy due to inaccurate individual examinations.

In July last I presented some statistics for the period 1920–24 as a contribution to the discussion on

hyperpiesia at the Bath meeting of the B.M.A. It should be noted that they are based only on policies in force 1–4 years; at some future date I hope to be able to supplement this preliminary report by a larger experience extending over a much longer period.

The paper has been recently published[1] so I will refrain from quoting it in any detail; the following table is, however, from our point of view, its essential feature:—

	M. and F. combined.	M.	F.
1. S.A.P. not recorded	97·1	103·3	77·2
2. „ under 140	102·8	105·4	83·8
3. „ 141–170	133·6	133·1	139·5
4. „ over 170	219·6	255·4	—
5. „ „ 200	827·5	—	—

(The figures represent the ratio of actual to expected deaths in each group, taking the figure 100 as the ratio of actual to expected deaths in our ordinary branch policy holders medically examined at entry over this period, 1920–24.)

These figures offer striking confirmation of the view that high blood pressure is unfavourable to longevity; that the outlook gets rapidly worse when the pressure is over 170, and that at 200 and over the outlook is extremely unfavourable.

The other table of special interest refers to the relation of high pressure (200 and over) to albuminuria in 130 cases:—

Albumin absent	71·5 per cent.
Trace of albumin	15·4 „
Albumin in appreciable quantity	13·1 „

THE FUNCTIONAL EFFICIENCY OF THE HEART.

The other feature in which it seems to me that some progress has been made in routine examination during the last three decades has been the increasing recognition of the importance of tests for myocardial efficiency. In 1897 the late Dr. Theodore Williams read to this Society an excellent paper entitled the Influence of Heart Disease in Life Assurance. If any one of us is inclined still to believe that the real knowledge of the heart and its disorders began only with the introduction of the polygraph and the string galvanometer, I would suggest a perusal of Dr. Williams's paper as an able exposition of the position of cardiac medicine at the end of the nineteenth century. The following brief extract, from a paragraph dealing with "double mitral" disease, has a very modern ring:—

"The loudness of the murmurs is no index of the danger of the lesion, but everything depends on the condition of the muscular walls. . . ."

Yet, in spite of this clear recognition of the importance of the heart's capacity to contract adequately, the paper contains no hint as to any tests for estimating what we now call the extent of the "field of cardiac response." But though this omission is so striking in the case of Dr. Williams's paper, yet we find the point not altogether ignored in the subsequent discussion. Appropriately enough, it came from the late Sir Thomas (then Dr.) Crosby, one of the soundest and most experienced examiners of his day. His words are as follows:—

"An excellent plan, and one I have adopted for years and years, to find out the condition of the pulse, is to trot him round the room, to try the pulse also sitting and standing, and after a brisk walk."

So that, even in 1897, the value of an exercise test in life assurance practice was recognised in one quarter at least; it is curious that it took so long to find its way into routine practice; so far as I am aware, I was a pioneer when, in 1913, I introduced an exercise-tolerance test as one of the items in the examination forms used by my Company.

In the same discussion, Dr. C. Y. Biss sounded a note which strikes a very responsive chord in my own heart. He said:—

"I have thought sometimes, especially in the teachings of hospitals, that it would be better to persuade the students not to begin with the stethoscope, but to begin in some other way—to very carefully find out the size of the heart and very carefully study the character of the pulse before going to the stethoscope. If we followed that rule ourselves these middle-life cases would not be so difficult to us as they sometimes are."

Myself, I would go even further than Dr. Biss; I say, in all seriousness, that it was a bad day for life assurance when the stethoscope was first applied to the heart; that it has done more to confuse the issues between proposer and company than most of us can realise. Conceive, if you can, the enormous number of perfectly good lives rejected, and, what is worse, made unhappy and invalided, by the discovery of a perfectly harmless "murmur"! Conceive, on the other hand, the number of thoroughly bad lives accepted as a result of the examiner's reliance on the method deprecated by Dr. Biss—acceptance of the stethoscope as the practical arbiter of the heart's condition—"no murmur, therefore a good heart." I repeat that, on balance, the harm done, not only to life assurance, but to medicine generally, by the auscultation of the heart, immeasurably outweighs the good. It is true that, in this respect, we are beginning to learn wisdom, but I feel that even now, in spite of the undoubted advances due to the "new school" of cardiology, the stethoscope still looms too large in the perspective of the heart examiner.

PULSE IRREGULARITIES.

We have, however, I feel, made a more definite advance in the recognition of different types of pulse irregularity, especially in our ability to differentiate that due to premature contractions (extra-systole) from that due to a fibrillating auricle. It is true that, even now, there is some difference of opinion as to the significance of the former, as was made clear to us by Dr. Strickland Goodall's recent paper. But, allowing for this, our ability to diagnose the principal types of irregularity, and our knowledge of their prognostic value, is a real advance for which we owe a great debt to Mackenzie, Lewis, and their fellow-workers.

To sum up, then, I feel that, during the last 30 years, our methods of routine examination have been usefully enriched by (1) the measurement of arterial pressure; (2) the recognition of different types of pulse irregularity; and (3) the estimation of the field of cardiac response by an exercise-tolerance test, in which attention is paid, not only to the variations of pulse-rate, but to the amount of distress and the nature of the sensory symptoms evoked.

SPECIAL METHODS OF INVESTIGATION.

When we turn to the *special* methods placed at our disposal during this epoch for the estimation of functional efficiency, we are confronted with a large number of methods of undoubted utility, provided that the proposer and the company combine to render their use practicable. Without attempting anything like a complete list, I would mention particularly (1) skiagraphy, especially of the chest and abdomen; (2) the Wassermann test; (3) the electro-cardiograph; (4) tests of renal function; and (5) sugar-tolerance tests by estimation of the blood-sugar.

Time does not permit of even a brief comment on all of these, still less on many others which I have not mentioned, though each of us could prolong the list to an almost indefinite extent. I should like, however, to consider for a few moments the last two on my list—namely, tests of renal function and of sugar tolerance.

ALBUMINURIA.

A few moments ago I spoke somewhat forcibly of the dis-service done to medicine, and especially to life assurance, by the application of the stethoscope to the heart. To some extent, though less strongly, the same criticism is applicable to the introduction of urinary tests into the routine examination of the individual. Is there any medical adviser to a life office who is not sick and tired of the ever-recurring problem of how to deal with the apparently healthy

[1] Brit. Med. Jour., 1925, ii., 1166.

proposer in whom is found a trace of albuminuria or a trace of glycosuria? The first paper on a special subject read to the Society (May, 1894) was one by the late Dr. Vivian Poore on the Relation of Slight Degrees of Albuminuria to Life Assurance, and the problem there stated has remained with us ever since. It is true that, from time to time, methods have been, and are still being, brought forward to enable us to determine its significance by further urinary tests—the presence or absence of casts and other abnormal constituents, such as bacteria, pus cells and crystals, the nature of the "albumin," whether serum-albumin or globulin or nucleo-protein, their proportion to each other, the diastase content, and so on, but the problem remained unsolved. In recent years a good deal of work has been done on methods designed to estimate the functional capacity of the kidney as an excretory organ, and so to arrive at a knowlege of the extent of its impairment, if any. For medical prognosis, the most useful methods at present seem to be (*a*) the estimation of the blood-urea and non-protein nitrogen, and (*b*) the urea-concentration test associated in this country with the name of MacLean. With regard to the former, it is held that a urea-content greater than 40 mg. per 100 c.cm. shows definite retention due to renal inefficiency. From the point of view of life assurance, I think that this may be accepted—i.e., that a urea concentration above this figure is evidence of renal impairment; the converse, unfortunately, is not true; the urea figure may be little, if at all, increased in cases of serious kidney disease, thus:—

"Little or no retention is found in parenchymatous nephritis until the terminal stages, hence these cases are not usually detected by an examination of the blood nitrogen distribution." [2]

And again:—

"It has usually been claimed that blood analysis will indicate whether a particular patient is likely to go into uræmia. Although this is true in the great majority of instances, we have seen four cases in one year with typical uræmia and blood-urea contents below 40 mg. per c.cm. The non-protein nitrogen content, however, was high in all." [3]

Hence we may conclude that the test is useful in confirming the presence of serious kidney trouble, but not in excluding it.

With regard to the urea-concentration test, its place in life assurance medicine can, in my opinion, be summarised as follows: A proposer whose urine fails to attain a urea concentration of 2 per cent. after the oral administration of 15 g. must be regarded as suffering from definite impairment of renal function; if the examination of the urine and the general condition of the proposer suggest the presence of "granular kidney," the attainment of this concentration must be regarded as a favourable sign that the kidney involvement is slight. If the urine examination, on the other hand, suggests the presence of parenchymatous nephritis, the test has no value in assisting to a favourable prognosis, as many cases have been recorded in which the urea concentration was normal in the presence of advanced parenchymatous nephritis. Personally, my experience of this test has been very limited, and I should welcome the views of any member who can speak from a fuller experience. As to the other tests of renal function, such as the phenol-sulphol-phthalein excretion test, which have been found useful in surgical practice, I have had no experience at all, but I very much doubt whether any of them would find a practical application in our branch of medicine. On the whole, except for a limited help from the urea-concentration test, we do not seem to have made any appreciable progress in the last 20 years in our attempts to assess the risk in cases of albuminuria. The laboratory has afforded us no short cut; the decision still lies with the clinician from a general survey of all the available information germane to the task.

[2] Recent Advances in Medicine (Beaumont and Dodds), p. 61.
[3] Ibid., p. 75.

GLYCOSURIA.

Very different is the position with regard to *glycosuria* and its assessment. The last 10 years have witnessed a remarkable advance in our knowledge on this subject. In 1914 I read a paper to this Society on the Significance of Temporary Glycosuria. In my paper I stated:—

"The vast majority of cases of temporary glycosuria connote a temporary hyperglycæmia."

In the discussion, Sir William (then Dr.) Hale-White commented on this statement, that it

"may or may not be so, because it is very rare, surely, for a doctor to test the blood in a case of slight glycosuria, and I have often wondered whether some of the cases may not be those in which the glycosuria is presumably due to an abnormal condition of the kidney letting the sugar through."

Thanks to the improvements in the technique of blood-sugar estimation, it is no longer "very rare" for the blood to be examined in cases of glycosuria. The curve of the blood-sugar percentages following the administration of 50 g. of dextrose is now comparatively easily obtained, and is a most valuable help to us in determining the significance of glycosuria. For us it represents a very real advance in our methods, and enables us to replace guesswork by precise knowledge. I have availed myself of this test in a good many cases of glycosuria; some of them have been shown to be of undoubted renal origin—an abnormally low threshold—and these have been accepted at ordinary rates, if all other conditions were favourable. Others have been proved to be frank diabetes of slight or grave degree; in a few the result was of doubtful significance, the so-called "lag curve" indicating a delay in the coming into play of the storage mechanism, so that the blood-sugar concentration shows a short temporary rise above the threshold. This is not a suitable occasion for further detail, but in view of the great advances in this subject which have been made in recent years, I think we might well devote a meeting to the reconsideration of the whole subject of glycosuria, including the effect of insulin treatment on the prognosis in diabetes.

So much for a sketchy outline of our progress in methods of examination. On the whole, I think it may fairly be said that we have made some definite advances in the period under review, and that there are reasonable hopes of still further advances in the near future. But, when all is said and done, there is something in the examination of a proposer which can be neither measured nor weighed, which is beyond the range of clinical instruments or laboratory analysis. I mean the general impression conveyed to an experienced examiner. We all know quite well that the examination may fail to reveal any definite defect—that the replies to the specific questions in the medical report form may all be consistent with perfect health, and yet——! We feel, instinctively, but none the less surely, that his prospects of longevity are below par; that what, for want of a better term, we may call his "vitality," is poor. Personally, I regard this as one of the most important factors in assessment, but, unfortunately, when the examination is conducted, not at chief office, but by the occasional examiner, it often happens that we lose the benefit of this impression. And the more we elaborate the methods of examination the greater the risk of overlooking this aspect, of "not seeing the wood for the trees." I do not advocate a return to the primitive method of examination by the candidate's appearance before the board of directors, but I do feel strongly that we should never lose sight of the fallibility of most of our tests, and that we should give full weight to the indefinable, but none the less valuable, attribute of "vitality."

THE ASSESSMENT OF IMPAIRED LIVES.

When we turn from the conduct of the medical examination to the other aspect of our duties—that of assessing the extra risk, if any—we find even less evidence of progress during the period under survey.

For all practical purposes our methods remain entirely empirical; we attempt to translate some physical defect into terms of time or money with little to guide us except tradition and a hope that instinct will supply the answer denied to us by knowledge. When we suggest an addition of 5, 10, or 15 years for, say, an otitis media or an old empyema, do we arrive at our decision on any grounds which we could justify in a court of reason? For most of us, assessment implies a compromise between our hopes and our fears—our hopes of protecting the company and our fears of killing the business. Very rarely indeed is it based on any actual knowledge of the effects of the particular impairment on the expectation of life. On more than one occasion papers of great merit on this topic have been read to this Society by some of our more actuarially-minded members. I would mention especially in this connexion one by the late Dr. T. D. Lister, in 1901, on a Graphic Expression of Extra Risk as implied by an Addition of Years, and one by the late Dr. R. Hingston Fox, in 1902, on the Method of making Advances in Impaired Lives.

But the practical result of these, so far as I can gather, has been negligible. Nor is this surprising. Not many of us, I fear, possess the true statistical mind; still fewer of us realise exactly what is involved in the ordinary method of assessment. It would be an excellent discipline for us to try our hands at super-posing on a normal mortality curve our idea of the curve for some particular case which we are attempting to assess.

Consider, for example, the case of a man of 50 with a moderate degree of myocardial damage. For a healthy man aged 50 at entry, according to the O [M] table, the chance of his dying in the first year of assurance is 0·0074; in the tenth year 0·0291; in the twentieth year 0·0617, and so on. How will the myocardial damage affect the graph? An attempt to solve this simple example will make us realise what guess-work our assessments really are. It would be entertaining, if not flattering to our pride, to compare the answers of all our members if set an examination paper on these lines. Yet this is the problem which we implicitly profess to solve whenever we venture to rate up a proposal. This consideration raises in my mind the question—Does it not seem rather futile to go to a considerable trouble to determine the exact degree of impairment of a proposer when the translation of this into assessment rests on so vague and insubstantial a basis?

The fault, if fault there be, does not, however, rest entirely, or even chiefly, with us. Strictly speaking, the doctor should never be called upon to make an assessment; that should be the duty of his colleague the actuary. In actual practice, perhaps, it might best be done, as it frequently is, by the two in consultation. But it will never be placed on a really satisfactory basis until a joint medico-actuarial investigation has been carried out similar to, but on a wider scale than, the American investigation of 1912. It must aim at the production of mortality experiences for all the ordinary impairments, from data large enough to eliminate the fallacies arising from insufficient cases.

My conception of the ideal basis for assessment is somewhat as follows: The medical men, in committee, should draw up a list of all the important defects likely to be encountered in our work. The actuaries should then gradually accumulate the experience of the offices, and in course of time evolve from this material the mortality for these different classes. It might be advisable to subdivide some of the classes into three subclasses—slight, moderate, and severe. In the case, then, of a proposer suffering from one or more of these defects, the essential duty of the medical officer should be that of stating to which class or classes the proposer belongs. The actual assessment would then be made by the actuary from these data.

In this way I believe that assessment might ultimately become more rational and consistent than it is at present; of course, the offices which specialise in making large profits from impaired lives may quite possibly prefer the present method of rating, but that point would hardly affect the argument as to the theoretical advantages of the new method suggested. I realise full well the great difficulties in the way of attainment—the enormous amount of data required and the labour involved. But I see no reason to doubt the possibility of its ultimate achievement, though many presidents will pass this chair before it becomes an accomplished fact.

FUNCTIONAL OR ORGANIC?

SOME POINTS OF VIEW.

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THE subject of the minor mental disorders, called functional, should engage the interests—both scientific and humane—of practitioners, for it concerns a group of patients whose ills provide many unsolved problems of pathology and causation, while the nature and persistence of their complaints invite, if they do not sometimes exhaust, our sympathy.

The Organic Point of View.

I will introduce my remarks on this point by citing an extract from a letter written to a consultant about one of these cases by her medical man. It describes succinctly the type of illness which I am going to discuss and reads as follows:

"I want you to send an appointment to a Mrs. X. She belongs to a group all too common in private practice. I am sure some wise man like yourself will find a lesion in the cerebellum one of these days. The balance of judgment and sensation has gone wrong; they live in their pains, kill all their friends off one by one, and still continue to have pains. What happens in the next world after their departure from this I don't know. Lord help me! Will you, please?"

Follows an extract from the consultant's notes a week later:

"Mrs. X, aged 63, widow, complains that she is always in pain all over; everything she eats turns to acid; she feels cold terribly, never warm; has pains like electric wires and doesn't want to be touched; feels hungry, yet doesn't know what she wants; has no proper sleep because of her pains; finds it hard to keep from crying. She has been like this for nearly eight years, much worse for the last two. Has been a widow 17 years. Husband died of a stroke. Kept home going for children until a few years ago, when they were all out in the world. Now has nothing definite to do. No previous illness, except that she suffered from migraine up till climacteric at 50. Good physical condition—looks 10 years less than her age. Arteries good. Blood pressure 145. No signs of organic disease. Full of grievances and self-pity."

Further extracts from a letter written the same day from consultant to practitioner:

"As far as I can gather the trouble began several years ago, when she found the task of keeping house too much for her and gave it up. Since then she has been without any object of interest except herself and her sufferings. Her friend, Mrs. Y, tells me that she never goes out, and makes no friends. I strongly advised her in the presence of her friend to find some kind of an object for herself in life—any regular duty which would in time make her feel she was essential to someone or to some organisation. I suggested, for instance, that she might do some visiting in connexion with the church, visit the sick, read to a blind man, anything so long as it takes her outside herself and makes her feel that she is indispensable to someone. [There follow some suggestions for symptomatic treatment and hypnotics. Finally:] So much for my suggestions as to physical treatment, but it is her attitude of mind (not her cerebellum) which is wrong, and that in a woman of 60 is difficult to correct."

At first sight there appears to be a wide divergence of opinion between practitioner and consultant here. The one speaks of a lesion of the brain, the other of an attitude of mind. But are these two views really incompatible? True, the symptoms of the case belong to a class with which we are familiar, and do

not in our experience lead to the development of any of the known physical signs of organic nervous lesions, or to any appearance post mortem from which we can discover the brain to have been diseased.

But we must not regard our armoury of physical signs as complete. It is only 25 years since the significance of the extensor plantar response was discovered. And again, the non-existence of demonstrable lesions, even under the microscope, is but negative evidence and takes us no further. It is but a few years since the symptom-picture of paralysis agitans, for instance, was proved in certain cases to have an organic basis in lesions of the basal ganglia and brain stem.

Let us again dip into the consultant's notebooks. This time it is a case sent up to hospital with the following note:

"Would you please see the bearer, Mr. Z, aged 42. I don't think there is any actual lesion, but he is worrying himself into a state of neurasthenia. He is firmly persuaded that there is 'something wrong with his stomach' and that he needs an operation. I think perhaps the opinion of a consultant might reassure him."

As the patient walks into the examining room the consultant's suspicions are aroused by a certain immobility of the facies and rigidity of carriage. The gait is slow, the arms still and pronated. As the examination proceeds suspicion develops into certainty that the case is one of encephalitis lethargica.

The patient complains chiefly of vague abdominal discomforts described as a constant sensation of fullness, but sometimes of a feeling of nervousness which comes up from the stomach and makes him "all of a tremble" so that legs and arms shake. This is especially brought on by worry. He has been working in his shop, but complains of what he calls "depressions"—pains come across the side of his head and things get mixed. There is a tightness on his head so that he cannot concentrate on his work. His legs get tottery and he is afraid to step out. The same feeling sometimes comes up his back and fixes his neck and the back of his head so that he cannot move right or left—that is to say, he *can* move, but only slowly and with difficulty. All these symptoms he himself attributes to a black draught which he took two years ago for constipation and which he is convinced injured his liver and kidneys. This was in February, 1923. After taking the draught he saw everything double for two days, and has never felt the same since. A short time afterwards he developed insomnia, which persisted continuously for many months.

This is by no means an exceptional case. Among my own notes I can find many examples of what may be called the neurotic group of symptoms appearing as a part of the picture of encephalitis lethargica, sometimes in the foreground, sometimes, when physical symptoms are predominant, in the background. Such cases, in which we have every reason to suppose that the neurotic symptoms are due to inflammatory lesions of the nerve-cells, compel us to remember that behind all disturbance of function there must be some physical change. Herein also may be found some justification for the practitioner who maintained that some wise man would some day discover a lesion of the brain to account for such symptoms as Mrs. X's.

Yet, in the recital of the symptoms there was something about the story of Mr. Z which conveyed throughout an impression of organic nervous disease, something lacking from the story of Mrs. X, something not easy to define. In reply to my question, the consultant says that Mr. Z showed a certain reserve, a certain detachment, which was absent from the other story. Mrs. X seemed to be completely immersed in her symptoms; Mr. Z, so to speak, had his head above water and could descry the morass in which he floundered. In the first case the personality was involved as a whole, in the second only in part. Hence partly the consultant's view that Mrs. X was suffering from an attitude of mind, Mr. Z from a lesion of the brain.

This leads us to the consideration of the

Psychogenic Point of View.

This supposes that, apart from any actual disease of or damage to the nerve-cells, neurotic symptoms may result from abnormal habits of mind. The discerning psychologist will, of course, admit that underlying all habit formation there must be some physical change, some alteration perhaps in the setting of synaptic junctions. He claims, however, that such changes are themselves the result of mental processes, and that they may be reversed by other mental processes. This may be easily proved in a case of frank hysteria with physical symptoms, such as a paralysed arm. So long as the patient regards the limb as a dead weight he cannot move it; when he has been persuaded to revise his attitude of mind and accept the arm as an active part of himself, for which he must accept control and responsibility, he recovers the use of it.

Equally striking results may be obtained in some other cases of neurosis, in which the disturbance is at a higher level, the symptoms being more obviously of a mental order. For instance, I shall quote in brief the story of a young man who developed a whole series of anxiety symptoms, including a phobia of blushing. On account of his illness he had already been absent from his work for three months. His real trouble proved to be the inability to meet certain sexual difficulties. He had been living away from home for the first time, and found himself exposed to temptations from which he had hitherto been sheltered. Being of a reserved and sensitive disposition he had reacted to these difficulties by endeavouring to shut them out of his mind. Thus he became self-conscious without any real insight into the cause.

As the result of a few common-sense talks he was first enabled to see his problems, then to view them from a new perspective, and finally to revise his whole attitude of mind towards the troubles of sex, realising that he was encountering a very common difficulty which he had to meet in the same way as hundreds of others before him—with courage, self-reliance, and self-tolerance. After going back to his work he wrote a few weeks later: "It really is extraordinary how different the same world can look in so short a time." He never looked back.

In many adolescent neuroses equally good results can be obtained. In cases of long standing and in older people treatment is less successful. But it may fairly be argued that in these constant use may have determined fixed patterns among the neurons concerned, such as we see at lower levels in the functions of the nervous system; for instance, in a man's handwriting. In older people we may suppose that such fixation, once having occurred, is far less liable to change than in the young, whose neuronic patterns are generally more flexible. In this connexion we must also remember the hereditary factor, which may determine from the first the lines upon which habit formation will proceed.

We may conclude, therefore, that, whilst removal of symptoms by psychotherapy is proof of their origin in an attitude of mind, the converse is not true; and that an attitude of mind may, through long usage or the limitations imposed by inheritance, be fixed and irremovable. Such assumptions, which, with the development of psychology as a science, have found wide acceptance, will help to explain the genesis, not only of the neuroses, but of certain psychoses. They will also indicate the absence of any change in the brain-cells in these cases, other than the arrangement of the neuronic patterns—alterations such as, in the light of present knowledge, we cannot expect to demonstrate under the microscope.

The Toxic Point of View.

This supposes that the conditions of mental disorder which we are discussing are due to the injurious effect upon the nerve-cells of poisons, bacterial or chemical. These poisons may originate from disease in any of the bodily organs and may be of various kinds. The common feature is their selective incidence upon those nerve-cells which are primarily concerned with the higher mental functions.

In favour of this supposition we may develop the following arguments: We have many striking

examples in neuro-pathology of the selective action of poisons, for instance, diphtheria, lead, alcohol, anterior poliomyelitis. We have even in neuro-syphilis and encephalitis lethargica some indication of a selective action among the higher functions of the brain, resulting in mental symptoms, which in the case of each disease are somewhat characteristic. Clinical experience also teaches us that mental symptoms may occur in a great variety of bacterial intoxications, the kind of mental disorder being very much the same whatever the organism concerned—a state of confusion which may vary in degree from a condition in which there is a sense of being muddled and unable to concentrate to a violent delirium with complete disorientation.

These mental states one may see in puerperal sepsis, in pneumonia, in typhoid fever, and in some febrile conditions of uncertain origin. From such mental illness the patient as a rule makes a complete recovery, indicating that the nerve-cells have merely been put out of action, not destroyed by the poison. Here, in addition to the mental symptoms, we have constitutional disturbance, but it is possible that poisons with a selective action upon the brain-cells may cause mental symptoms without provoking any constitutional reaction. The advocates of this theory look for the causation of the neuroses in focal sepsis of the teeth or tonsils, in latent infections of the renal, respiratory, or alimentary systems, or in errors of diet and metabolism.

Turning to my notebooks for light upon this aspect, I can find only a very few instances in which treatment of focal infection or metabolic error has produced that striking improvement in the mental symptoms which we should expect if these were entirely of toxic origin. There are several cases of early tubercle, but in all of these there is some hint of physical illness into the bargain.

There is a note, for instance, upon a single woman of 20, whose chief complaint was of loss of energy, irritability, and restless nights. She found herself unexpectedly nervous of traffic and jumpy, and her relatives found her rather peevish and difficult. She had what was considered to be a nervous cough, which sometimes made her sick. But she also had anorexia, and her lack of energy was largely physical. She had enlarged glands in the right axilla and neck, and the X ray showed enlarged and calcareous glands at the roots of both lungs. At the time she was working in a city office. After a month's rest out of doors in the country her symptoms had disappeared; she slept well, ate well, and had recovered her mental spirits and equanimity. The glands in the neck were much smaller.

On the other hand, I find many notes of patients complaining of anxiety, depression, and sleeplessness, in which it is recorded that tonsils or teeth had been extracted, vaccines from the stools given, or a special diet prescribed; for a short while the patient thought he was improved, but subsequently relapsed.

The Endocrine Point of View.

Since the discovery that by the oral administration of thyroid extract it is possible to transform certain toad-like caricatures of humanity into alert human beings, the notion has developed that in the group of cases we are considering there may be some defect of internal secretion, or that the balance of the internal secretions is perverted. This idea has resulted in a great deal of empirical treatment. Unfortunately, there is very little scientific proof for the assumptions upon which such treatment has been based.

There are two methods by which it may be proved that a particular illness depends upon lack of an internal secretion. It may be shown that the illness or abnormality is constantly associated with deficiency or hypertrophy of one of the ductless glands, as in Addison's disease, Fröhlich's syndrome, eunuchism, Graves's disease; or the administration of an endocrine extract may be shown to produce a specific effect upon the disorder, as in myxœdema. The examples I have quoted exhaust the list of disorders in which such proof is forthcoming, and leave us still with the bulk of our neurotic cases unexplained. In my notebooks out of 800 consecutive cases of this type, three only proved to be cases of Graves's disease and one of myxœdema. The great majority had at one time or another been treated with various preparations of mixed glands or with thyroid without anything more than transient benefit in a few cases.

The endocrine theory of causation of the neuroses, therefore, though it must be considered tenable and is supported by certain instances such as I have quoted, still lacks proof. It may be that in this direction new methods of investigation will carry us further, but we must be cautious of accepting a theory merely because it is attractive.

The Exhaustion Point of View.

There are those who designate the minor mental disorders which we are discussing under the title nervous exhaustion. What exactly is meant by this it is difficult to say. Unfortunately, the term is widely used without adequate definition. On the one hand, nervous exhaustion may be taken in a causative sense to imply that the symptoms are due to exhaustion of the nerve-cells; on the other hand, it may be interpreted in a symptomatic sense as comprising all those conditions in which undue fatiguability of the nervous functions is the most prominent feature.

In the latter—*symptomatic*—sense the term might perhaps be convenient. In most illnesses, from an attack of influenza to the cachectic state of malignant disease, mental fatiguability may be a conspicuous symptom. But the use of the word exhaustion instead of fatiguability in this connexion is inaccurate and misleading. In the normal person such symptoms of nervous exhaustion lead simply to a craving for rest, and when this is obtained in sufficient quality and quantity the symptoms disappear. Nowhere was this more apparent than in the war; a man could and would work at high pressure for 48 hours or more at a stretch—and indeed maintain his efficiency for such a period. At the end of this time there would be great subjective discomfort and objective irritability, but 12 hours' sleep as a rule would completely restore the mental equilibrium.

Unfortunately, for the argument of those who claim exhaustion as the important *ætiological* factor of the neuroses, the symptoms of the neurotic are not, as a rule, curable by rest. The patient may be sent to bed for a week and obtain a full allowance of sleep without being a whit the better. Indeed, if only the neuroses were really due to exhaustion, how simple the treatment of them would be! We probably should not even be discussing them, for they would not be of sufficient interest to comply with the criterion of scientific importance which I have demanded for my subject.

Actually, there is a group of neurotics in whom nervous exhaustion in the shape of insomnia seems to play an important part, patients in whom sleeplessness has developed as a habit and whose nerve-cells are probably suffering from accumulated fatigue. I say "probably" because there is no certain means of demonstrating fatigue changes in the cells. The proof lies in the results of treatment. Remedy the insomnia, and the symptoms will disappear. But these cases constitute only a very small percentage of the neurotics whom we encounter in practice. Nervous exhaustion, then, in the symptomatic sense means nothing at all; in the causative sense it cannot be proved, save in a small group of cases, to be an important factor in the production of the neuroses.

The "rest cure," nevertheless, remains a popular form of treatment and is often attended by results which, for a while at any rate, appear satisfactory. The reasons for its popularity are not far to seek. In the first place the patient likes it. The vanity of the average male in particular is flattered by the suggestion that his symptoms are due to overwork. There is a touch of the heroic about this which is comforting. Moreover, the "rest cure" means in all probability a respite from the external difficulties

with which the patient has been contending, whether these be difficulties of disappointment at work or discord in the home. Naturally, therefore, in most cases the holiday gives relief. But with its ending the old difficulties have to be faced anew, the old symptoms are apt to return, and the patient, having once accepted the idea that overwork is to blame, feels that he is not yet fit to grapple with his problems but needs more rest. Thus, from moment to moment re-entry into the battle of life may be delayed until a habit of nervous invalidism is engendered, which it is difficult to break.

My own experience of the neuroses leads me more and more to the belief that in this way over-emphasis of exhaustion as a cause may do positive harm.

A young man of 18, for instance, consulted me in January, 1922, on account of inability to concentrate. In July, 1921, he had worked hard for an examination which he passed successfully. Thereafter, without any real holiday, he began working for a scholarship, which he duly obtained in September. In October he entered upon a new course of studies, and after a week or two developed the symptoms of which he still complained. He was then taken to see a physician who made the diagnosis of nervous exhaustion, and advised rest until he got better. He came to me three months later because he still felt unfit for his work. I found no organic disease nor any special worries, and accepted the exhaustion hypothesis, advising further rest, which involved staying away from his work for another term. In April I received a letter from his relatives saying, "He cannot yet bring his mind to concentrate upon study. We think it is better that he should wait until next October before resuming work."

I saw him again in August. He was then still not well. On this occasion he disclosed worries about a pain in the left groin which he associated with frequent seminal emissions. This led to a discussion of sex difficulties with more frankness on his part than he had displayed at the first interview. I began to be critical of my original diagnosis, and advised him to start work in October. He did so and got on well. Early in 1923 he came to see me again with a recurrence of his old symptoms, together with insomnia. This time I was determined to adopt a different attitude. I got him to discuss with me for an hour the particular difficulties of the moment—which were mainly work—and his attitude of mind towards them. I then told him as it was a Friday to take the week-end off, and begin work again on the Monday. I also gave him three cachets each containing 7½ gr. of medinal with instructions to have one ready at his bedside each night and to take it if he had any difficulty in getting off to sleep. He wrote a week later: "I am happy to say that I appear to have regained normal health. I had an enjoyable week-end followed by a slight relapse on Monday, the effects of which seem quite to have disappeared. I did not find it necessary to take more than one of the cachets you prescribed."

He came to me again seven months later with the old symptoms—indistinguishable from those of which he first complained. On this occasion again he proved to be worrying over trivial reverses at his work. He had already taken a week's holiday without feeling any better. We talked over his difficulties and I advised him to continue at once his studies for an approaching examination. He wrote four days later, "I am glad to be able to tell you that I am now feeling perfectly well and able to continue with work. I hope this will be the last time I shall trouble you with this matter."

I believe that in this case if we had continued to regard exhaustion as the cause and rest the remedy, we might still have been waiting for recovery, and that if more effective methods of treatment had been employed from the start a valuable year might have been saved.

Summary.

Having considered the subject from several different aspects we are now in a position to review as a whole the probable nature and causation of the neuroses. We have to admit that the mental equilibrium may be upset in the same way by different causes, and that the mental symptoms resulting, for instance, from the toxæmia of early phthisis, may closely resemble on the one hand those caused by encephalitis lethargica, and on the other hand those which depend upon some undigested worry.

We have learned, therefore, the need of careful discrimination in diagnosis. We have to beware of ascribing any particular mental symptom or group of symptoms to the action of a particular cause. We have to be constantly on the look-out for such causes as organic cerebral disease, latent toxæmia, disturbance of endocrine balance, and exhaustion. Careful examination will usually suffice to exclude these possibilities. Of the remainder it is claimed that there is, as a rule, something more than negative evidence for regarding them as dependent rather upon wrong habits of mind than the simple effect upon the mental processes of external causes.

Our verdict upon the relative importance of mental habit in these cases has a direct bearing upon their treatment. If we accept the psychogenic point of view we shall not be content to prescribe a rest cure, administer glandular compounds, or cultivate vaccines from the stools; nor shall we be obliged to resign ourselves to the notion of an incurable lesion of the brain. On the contrary, we shall endeavour to investigate the psychological factors at work and help the patient so to improve his mental attitude as to make a more satisfactory adjustment to his difficulties. This, doubtless, requires a good deal of courage. When we inform a patient that his symptoms depend upon faulty habits of mind, however tactfully we may put it, we are passing judgment upon him and asking him to accept some responsibility for his illness. Indeed, such acceptance of responsibility is an essential preliminary to successful treatment. Now, neither the average patient nor his friends and relations are willing to accept such responsibility if they can find some other explanation. They would far rather be told that the symptoms are due to overwork, to encephalitis, to toxæmia, or endocrine disorder. This is particularly true of the relatives in the case of children or adolescents whose faulty habits of mind are due to faulty management and control. It is precisely in these cases that happy results may often be obtained by means of psychotherapy combined with alterations in the domestic régime.

The practitioner who has the courage of his opinions and confidence of the family is sometimes in a position to achieve success. Unfortunately, however, to my mind there are those among the elect who, despite the facts which I have placed before you, proclaim wholesale this or that physical theory of causation as proven. Hence a way of escape for the patient who is unwilling to face his difficulties and an additional embarrassment for the practitioner. The patient seeks other advice and is told, perhaps, that the symptoms are due to some hidden toxæmia and that the remedy lies in its discovery and treatment. If other investigations prove negative there are always streptococci in the stools from which vaccines can be prepared. Prognosis may be, and usually is, guarded—for who knows how much permanent damage the toxins may already have done? But anyway the patient's self-respect and that of his relatives is saved. The medical man who offered the first opinion is discredited. And the opportunity for really effective treatment is lost.

I do not mean that all these cases are amenable to psychotherapy. In a great many the offending habit of mind is ineradicable, either because it is deeply rooted in a constitutional tendency or because it has become fixed by age. But I am convinced that many young persons develop into lifelong neurotics who might have been saved by the timely intervention of commonsense psychotherapy in the early stages of the malady.

Let me conclude with a plea for discrimination in the diagnosis, and commonsense and courage in the treatment of these cases, and above all for a healthy scepticism and the avoidance of cant and humbug. There will always be the neurotic who will not trust his doctor and who will refuse advice because it is unpalatable. To such a one the quack will offer—for a consideration—his panacea, and we may comfort ourselves with the reflection that each will probably get what he deserves—and one will ultimately deserve what he gets.

THE TREATMENT OF DUODENAL ULCER.*

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THERE can be no shadow of doubt that a large number of patients ill with a duodenal ulcer get perfectly well, and remain so, under proper medical treatment. Equally beyond dispute is the fact that a smaller number who continue to suffer despite the most careful dietetic and medicinal remedial measures obtain relief by a surgical operation. These remarks are concerned with this latter group.

It is clearly impossible to devise and carry out any surgical procedure unless this be based upon some definite conception of the fundamental nature of duodenal ulceration. Of the various hypotheses of the origin and nature of gastric and duodenal ulcer, that which regards it as an infective lesion is the one which explains most satisfactorily the known facts of the disease. I believe gastric ulcer to be due to an infection with some specific organisms not as yet demonstrable, and that invasion of the stomach or duodenal wall takes place from the lumen of the alimentary canal. Conditions favourable to the growth of the organism would appear to occur at some stage in the interaction of the intestinal and gastric, or possibly pyloric, secretions. When the duodenal bulb, contracting in the presence of pyloric relaxation, causes regurgitation of its contents back into the stomach, they pass upwards along the gastric sulcus, the "Magenstrasse" of German authors. Here they meet the gastric secretions, and at some point along the lesser curvature the optimum conditions for the development of a gastric ulcer occur. When duodenal regurgitation fails we know how there is an apparent hyperacidity, and such patients are recognised as being prone to develop a duodenal ulcer. This is because, in the absence of duodenal regurgitation, the predisposing stage of interaction between the two secretions takes place now in the duodenum itself. Such an hypothesis explains the distribution of gastric and duodenal ulcers and is strengthened by the occurrence of gastro-jejunal ulcers. Here again the lesion appears, not as would be expected in the most acid cardiac region of the stomach, but where the gastric and duodenal secretions meet. These facts suggest that one way to induce the healing of a duodenal ulcer is to alter the environment of the organism in the duodenum. This, indeed, is done by gastro-jejunostomy, the most widely practised method of surgical treatment. But pathological observation also shows us that duodenal ulcers, like the corresponding gastric lesion, are very prone to become callous, to be surrounded by much inflammatory infiltration, and to become so rigid and poorly supplied with lymph that there are very great mechanical and physiological obstacles to the healing process. Just as in the stomach excision of ulcers has, in the long run, proved more effectual than gastro-jejunostomy, so it is suggested that excision of ulcers in the duodenum is on theoretical grounds a better method than the indirect.

Results of Gastro-jejunostomy.

Whether such a belief should be put to the test depends upon the results which can be obtained by gastro-jejunostomy. It is here we come upon contentious ground. It is an undoubted truth that very many duodenal ulcers, even callous lesions, will heal after gastro-jejunostomy. There is not agreement, however, on the proportion of cured patients which results. Elsewhere I have set forth the statistics which have been published. Suffice it here to say that some of the greatest authorities—Moynihan, Mayo, Sherren—claim 90 per cent. or more cures. Such great satisfaction with the operation has not been expressed by other surgeons of eminence, more especially those on the continent of Europe, amongst others Finsterer, Haberer, Clairmont, and de Quervain. These latter authorities put the cures down somewhere about 70 per cent. or less. In a small group of patients which I investigated personally, the cures amounted to 69 per cent. Forsyth's interesting researches amongst doctors who, presumably, would receive early and efficient treatment, showed that 58 per cent. remained free from symptoms after gastro-jejunostomy. Lewisohn found that a little more than one-half the patients are cured and that 18 per cent. suffered subsequently from gastro-jejunal ulceration. Smithies found that in 17 per cent. of cases gross hæmorrhages occur after gastro-jejunostomy. Sometimes this bleeding may lead to a fatal result. Very much rarer is the occurrence of perforation after gastro-jejunostomy. Nevertheless this has happened.

It has been suggested that the discrepancy in the statistical results is due to faulty operating, that the poorer results come from gastro-jejunostomy being improperly performed. This explanation does not suffice for the series I reported. In these cases there was no question of faulty technique. It would seem to me that a more probable explanation is that different classes of cases are being dealt with. If a surgeon operates only upon callous and inveterate duodenal ulcers, his results will not be so good as he who operates upon the non-indurated ulcers of the anterior wall of the duodenum and includes them in his statistical results. For instance, I find very few soft ulcers of this kind on the operating table, because they seem to heal by the efficient medical treatment my patients have always received before resorting to surgery. Of 28 resections of the duodenum, in 53·5 per cent. there were anterior and posterior ulcers, in 28·6 per cent. a single ulcer on the pancreatic wall, and in only 17·9 per cent. a single ulcer on the anterior wall. In favour of gastro-jejunostomy we may say that it is an easy operation to do and has a small mortality, but it is not without a measurable risk in the ordinary surgeon's hands. In a small series I reported three deaths after the operation, all of which were due to lung complications. I do not think generally it falls much below 5 per cent. The reported death-rate from a number of clinics is very much higher. The mortality after operation for a jejunal ulcer is high.

Partial Duodenectomy.

Turning to partial duodenectomy we are confronted with a difficult and tedious technical procedure, and very extensive surrounding fibrosis may make resection impossible, as happens indeed sometimes with a gastric ulcer. The risks of the operation are particularly injury to the bile or pancreatic ducts or the pancreas itself. Yet with care they can be guarded against, so that the mortality of partial duodenectomy need not be high. Amongst the 28 cases of my own there were two deaths, both from broncho-pneumonia. In one patient the common duct was cut across, but implanted into the duodenum. The patient is well.

Finsterer has been able to carry out 71 resections with only a 1·4 per cent. mortality. Whether partial duodenectomy will take the place of gastro-jejunostomy will depend upon (1) the end-results obtained by the operation, (2) the development of a technique which will make the procedure more easily carried out. The last condition, however, is not absolutely essential. We do not yet know the end-results of duodenal resection. Finsterer reports 93·9 per cent. absolute five-year cures amongst 63 cases. De Quervain, a most careful and cautious observer, asserts that resection of the duodenum gives better results than gastro-jejunostomy, but he does not give figures.

Amongst 16 of my cases who have been operated upon sufficiently long for some indication of end-results to be obtained, 10 are absolutely well, 1 eats

* Opening contribution to a discussion on the Treatment of Duodenal Ulcers at the Royal Society of Medicine on Jan. 6th, 1926.

anything and has such slight symptoms that he can almost be classed as an absolute cure, 2 have each had one attack of indigestion lasting a fortnight only, and in both of them it occurred approximately one year after the resection, 1 man has had treatment by his doctor for hyperchlorhydria symptoms, and 1 man, 19 months after his operation, says he has a return of pain similar to that of his original trouble: the man whom I reported as having sustained an injury to his common duct has lost his indigestion pain completely, but probably he suffers from a mild cholangitis from time to time. He has never lost a day's work from illness since his operation.

These are the first few cases I operated upon by the method. The future alone will show whether partial duodenectomy should be substituted for gastro-jejunostomy and whether any modification in the method is desirable. Just as a limited excision of gastric ulcers proved disappointing, so I believe it necessary to resect more than the affected segment of the duodenum and in my later cases I have been removing a part of the pyloric region of the stomach also. Axial union of the stomach to the duodenal stump is the routine and usually practicable. It was done in 25 of 28 cases. The digestive process by this means would seem to be less disturbed than by gastro-jejunostomy.

I am far from recommending the general adoption of partial duodenectomy for duodenal ulcers in the present state of knowledge, but I do insist upon the fact that the results of gastro-jejunostomy are not so satisfactory that there is no need to seek some improvement in the handling of these cases. Partial duodenectomy has proved itself to be a practical procedure without undue risk, and an investigation of its possibilities and results is certainly warranted.

Duodenal Hæmorrhage.

So much for uncomplicated duodenal ulcers. When bleeding occurs it is far more difficult to formulate a policy. In the first place there is a widespread belief that the hæmorrhage from a duodenal ulcer is never fatal. Whilst this is erroneous, the very existence of such a belief is witness to the fact that many patients recover under medical treatment alone. Yet the risk is there and it is by no means negligible. As in any other kind of bleeding, the best treatment theoretically is the direct. But this presents exceedingly great difficulties. Any operation in an exsanguinated patient involves a risk and an intervention should be as limited as possible. Unfortunately, serious bleeding usually proceeds from a branch of the gastro-duodenal artery, which means that the ulcer is situated upon the pancreatic wall or upper border of the duodenum. It is therefore difficult of access for excision, and ligation of the supplying vessels is not possible. Finsterer, indeed, advocates excision of the duodenum for hæmorrhage, but this is a method of treatment not to be lightly decided upon. On the other hand, I do not discard it absolutely as a method of treatment. Very recently I resected with success a callous ulcer stuck on to the pancreas in a man who, shortly before, had had a severe hæmorrhage, so that at the time of operation his blood contained only 54 per cent. of the normal amount of hæmoglobin. It was done without the aid of a blood transfusion, though ordinarily this would seem to be called for. Should removal of the ulcer be deemed too dangerous, opening the duodenum and cauterising the ulcer, followed by gastro-jejunostomy, is worth a trial. Dunhill carried this out with good result in one patient. Nevertheless, hæmorrhage from a duodenal ulcer is of the secondary type and is prone to recur after simple ligation. Should the ulcer fortunately be on the anterior wall, as occasionally happens, excision followed by gastro-jejunostomy is undoubtedly a good procedure. Gastro-jejunostomy alone has been done for duodenal hæmorrhage. It is a most uncertain measure. I have seen two patients die from recurrent hæmorrhage shortly after it. Finally, there are patients who are too ill for any surgical operation to be thought of. Starvation, rectal salines, morphia, and blood transfusion, with defibrinated blood because of the large amount of fibrin ferment present in it, are the measures to be used, and they are often effective. Too frequently the surgeon sees these patients only after repeated hæmorrhages. It would be infinitely better could the decision for or against surgery be taken at the earliest possible moment. The favourable time for intervention may easily be imperceptibly passed, but whether we should make it a rule to operate upon every patient with duodenal hæmorrhage, or await the progress of the case in the hope of spontaneous arrest, is a question which there are not enough observations available at present to decide.

EMETINE IN THE TREATMENT OF HEPATIC ABSCESS.

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IT has long been recognised that injections of emetine, when combined with surgical measures in liver abscess, appear to exert a distinct therapeutic effect in promoting the absorption of pus and obliteration of the abscess cavity, and it is generally conceded that in amœbic lesions of the liver this drug is distinctly more efficacious in extirpating the *Entamœba histolytica* than when this parasite invades the bowel wall.

Some authorities, however, go so far as to state that emetine injections are capable of curing amœbic abscess of the liver and bringing about the absorption of pus, even in the absence of surgical interference. For instance, Hodson[1] in recent papers claims that the pus of an extensive amœbic abscess is entirely absorbed after emetine treatment, and that therefore surgical measures should no longer be considered necessary until full doses of emetine have been employed, on the grounds that the analogy between amœbic abscess of the liver, gumma, and tuberculous abscess is a very close one, and that they should therefore be treated on similar medical lines.

A. S. Fry[2] has reported two cases in India in which the disappearance of signs and symptoms of abscess of the liver and apparent restoration to normal health was remarkable after 12 gr. of emetine had been injected. The records quoted are not very convincing, either that the pus was entirely absorbed, or that in fact suppuration of the liver had ever existed. No exploratory operation for the presence of pus appears to have been performed, and the period of observation subsequent to treatment appears to have been too short to obviate the possibility of a relapse taking place at some future period.

Clinical Records.

While employing emetine injections as an adjuvant in the treatment of liver abscess, we are by no means convinced that when given by itself it will cause absorption of the pus and consequent cure of the condition, as illustrated by the following cases:—

CASE 1.—This man is a pensioner who served in India, where he suffered from "pneumonia" and hepatitis in 1916; recurrences of this trouble took place in 1920 and in 1923, and it was found that he had liver abscess for which he was operated by the transpleural route and drained in the usual way. A second abscess occurred almost in the same situation one year afterwards, which was similarly

[1] Hodson, V. S.: The Treatment of Hepatic Abscess with Emetine, Jour. Trop. Med. and Hyg., 1921, xxiv., 108–109; On Emetine in Liver Abscess (correspondence), ibid., 1922, xxv., 64; Amœbic Hepatic Abscess Treated with Emetine Only, THE LANCET, 1924, ii., 1275–1277.

[2] Fry, A. S.: The Spontaneous Absorption of Amœbic Abscess of the Liver under Emetine Therapy, Ind. Med. Gaz., 1924, lix., 488–492.

treated, and he received on this occasion emetine injections. Two months subsequent to the second operation he was admitted to the Hospital for Tropical Diseases with symptoms of recurrence of abscess, with pyrexia, night sweats, epigastric pain, definite enlargement of the liver, and signs of involvement of the base of the right lung; *E. histolytica* cysts were found in the fæces and his blood showed a leucocytosis of 16,500. He was treated on purely medicinal lines with emetine injections (7 gr.) and 18 gr. of emetine-bismuth-iodide. After one month's hospital treatment a great diminution in the liver dullness had taken place, leucocytosis had disappeared, together with all signs and symptoms of his illness, and his physical condition had much improved. He had gained over 14 lb. in weight.

It was reasonable to suppose on the evidence so far accumulated that the liver abscess, as it undoubtedly was, had been cured by medicinal means, but in this hope we were doomed to disappointment.

His health, after temporary improvement, once more commenced to deteriorate, so that two and a half months after discharge he reported with hyperæsthesia of the right side of the neck and pain in the region of the right shoulder-joint, sufficiently severe to prevent sleep. His other symptoms were similar to those on the previous occasion. X ray examination showed definite doming and fixation of the right half of the diaphragm. A leucocytosis was present as before. On a similar course of treatment the symptoms and signs subsided in an equally satisfactory manner, but after three weeks in hospital it was noted that, in spite of absence of pyrexia, a leucocytosis still persisted. The liver was then aspirated on 30/4/25 by Mr. P. Kilner and two and a quarter pints of thick yellow liver pus were evacuated with ease. Since discharge from hospital he has regained his weight, and for the last four months has remained in good health.

The points of importance about the above case are: the occurrence of liver abscess seven years after date of presumable infection; the recurrence of a third abscess subsequent to two successful operations; the apparent recovery on emetine treatment without aspiration; and the eventual demonstration of a large amount of pus in the patient at *a time when all ascertainable signs and symptoms* of liver abscess had disappeared.

The second case of a similar nature we quote with the kind permission of Dr. G. C. Low:—

Case 2.—The patient was a Chinaman, who was admitted to hospital in February, 1925, with enormously enlarged and tender liver, pyrexia, a leucocytosis of 28,000, and signs of intoxication. He was immediately placed on emetine treatment (12 gr.) and during this course two pints of pus were aspirated from his liver. General improvement in the patient's condition then took place for the next three weeks, as evidenced by decrease in size of the liver and disappearance of pyrexia. The leucocyte count at the same time fell to normal. A month later the signs of accumulation of pus in the liver and thorax became apparent, so that it was necessary to aspirate, and on this occasion one pint of similar pus was abstracted. Further aspirations took place on three more occasions, a total of eight pints being abstracted, the accumulation of pus resulting in spite of emetine injections (6 gr.). Finally, rib resection was performed, over five pints of fluid being evacuated, and an abscess cavity of 8 in. diameter in the right lobe of the liver revealed. The cavity continued to drain for five days, when death took place. At autopsy a large ragged abscess showing no signs of collapse or cicatrisation of the walls was found.

It is hardly necessary to emphasise the points of this case, but it was conclusively shown that emetine injections did not in any way prevent the reaccumulation of pus in the abscess cavity.

Conclusions.

The purport of this paper is not to be taken as discountenancing the value of emetine in the treatment of liver abscess, but rather as emphasising that it is only to be used as an adjuvant to such a well-established surgical measure as aspiration. The rapid effect of emetine in acute amœbic hepatitis is probably to be ascribed to the action of emetine upon the amœbæ themselves, and the fact that none of these organisms was found in the liver pus after evacuation in the two cases reported may be also attributed to emetine, but there are no grounds for believing that, under ordinary circumstances, the administration of this drug in any way hastens or affects the absorption of pus which has already been formed within the liver.

TWO CASES OF DISEASE OF THE CERVICAL SPINAL CORD.

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The two cases of disease of the cervical spinal cord to which we call attention showed varying degrees of subarachnoid block, as well as other features of much clinical interest.

Hypertrophic Cervical Syphilitic Pachymeningitis.

A caretaker, aged 31, complained in September, 1924, of weakness in the shoulders and aching pain throughout the upper limbs. The left arm was affected more than the right, and he had on the left side "pins and needles" from the shoulder to the tips of the fingers. He felt his weakness most severely when he lifted, for example, a coal scuttle. In spite of treatment by massage he was getting worse. He said that he had contracted syphilis in 1905 and that he had been treated for this for two years. In the past he was in the regular army, and a boxer. He gave no history of trauma to the neck or spine.

He was seen by us early in January, 1925, and admitted to hospital on Jan. 7th. He showed marked winging of both scapulæ when his weight was supported by his extended upper limbs, due to weakness of the serratus magnus and the lower fibres of the trapezius on each side. At rest there was no deformity or visible abnormality, and apart from the scapular winging and a slight droop of the right upper lid there was no clinical evidence of disease. He had no headache. He stood erect, and the movements of his head and spine were properly and painlessly performed. He could actively elevate the upper limbs in a normal manner. There was no intrinsic atrophy or abnormal posture of the hands, and there was no herpes. There was no anæsthesia, dissociated or otherwise, and the reflexes of every variety were healthy. The electrical reactions of the muscles of the shoulder girdle and upper limbs were normal with the exception of the galvanic response in the right serratus magnus, in which A.C.C. was greater than K.C.C. Apart from the slight droop of the right upper lid there was no evidence of affection of the cilio-spinal centre. Pupils and optic discs were healthy.

The lumbar cerebro-spinal fluid was yellow and showed a coagulum. It contained 0·95 per cent. albumin. The fluid from the cisterna magna was colourless and contained 0·025 per cent. albumin. The fluid from both sites gave completely positive tests for syphilis. The condition clearly was active syphilis of the spinal meninges with intensity about the cervical cord, as shown by atrophic palsy of the serrati and lower trapezii (C. segments 3 to 7). In addition there was obstruction in the subarachnoid space. Hypertrophic pachymeningitis was diagnosed and the man was treated energetically with mercury and iodide of potassium. In a few days hiccup (C. segments 3 to 5) commenced and persisted, when he was awake and asleep, during the remainder of his illness. It developed within half an hour after cistern puncture. Weekly intravenous injections of novarsenobillon and fortnightly intrathecal injections of salvarsanised serum were commenced on Jan. 16th and 21st respectively, and the patient continued to take mercury and potassium iodide. On Feb. 6th paraplegia developed and increased rapidly. Sensation was lost up to the level of the second rib (C. segment 4), and urine was retained. The lumbar cerebro-spinal fluid remained yellow and the cistern fluid colourless. Lipiodol was not employed.

On Feb. 19th, as the severity of the symptoms was increasing in spite of treatment, and threatened an early fatal termination, cervical laminectomy was performed for the purpose of attempting to release the spinal cord from meningeal strangulation. Complete subarachnoid block was found. The meningeal coats were densely adherent to the bone, to each other and to the cord. They were stripped to the limited extent which was possible, but the cord did not pulsate. Although the operation seemed to be very well borne, the man died a few hours later. Autopsy showed the cervical cord encased in thickened, laminated, adherent meninges, and the findings suggested the impracticability of relief by any operation and the probable failure of any medicinal treatment to free the cord from strangulation. The microscope showed marked syphilitic endarteritis, round-celled infiltration and degeneration of the pia-

arachnoid, and perivascular round-celled infiltration of the vessels of the dura mater. Permission to examine the brain was not obtained.

We call attention (1) to the absence in this case of clinical evidence of internal hydrocephalus as a result of the block in the subarachnoid channel, (2) to the rapid progress of the disease prior to, and therefore not consequent upon, the administration of organic arsenic.

Intramedullary Cervical Gliosarcoma.

A woman, aged 41, was seen with Dr. H. H. Rubra, of Crouch End, on Feb. 17th, 1925. In August, 1924, she had complained of a sharp pain along the outer part of the left forearm. The pain resisted treatment, but disappeared spontaneously two months later. In October, 1924, she developed weakness in the left hand, and in November the right lower limb felt numb, so that she failed to appreciate the coldness of a clean sheet with that limb. Soon afterwards the left lower limb became weak. During January and February, 1925, she had complained of very severe generalised headache.

FIG. 1.

Intramedullary cervical glio-sarcoma; part of the lipiodol held up on the right side opposite the fifth cervical spine.

Condition on Examination.—The pupils were healthy. The right fundus showed three dioptres of papilloedema, with oedema of the surrounding retina and numerous hæmorrhages on the disc. The physiological cup was not filled. The left disc showed slight striation at its upper margin. Atrophy of the intrinsic muscles (Th. segment 1) had produced a griffin hand, and throughout the left lower limb there was paralytic weakness of the upper motor neurone type. The right lower limb, though powerful, showed early reflex changes of a similar character. The epigastric and abdominal reflexes on each side were abolished. The sphincters were healthy. Throughout the right lower limb and the lower part of the trunk on the right side there was complete loss of sensibility to pain and temperature. Cutaneous sensibility otherwise was nowhere affected.

The immediate diagnosis was a lesion, possibly syringomyelia, affecting especially the left side of the cervical cord. She was admitted to hospital on Feb. 25th, 1925. As further examination showed neither deformity of the spine nor any of the features commonly associated with syringomyelia a diagnosis of intramedullary tumour was made. The cerebro-spinal fluid from the lumbar region was yellow and contained 0·6 per cent. albumin. The fluid from the cisterna magna was colourless and contained 0·01 per cent. albumin. Tests for syphilis were negative. The xanthochromia of the lumbar fluid suggested that the tumour was expanding the cord and causing a subarachnoid block from within. This was confirmed on March 4th by lipiodol, injected intrathecally into the cistern, being for the most part held up opposite the fifth cervical spine (Fig. 1). The headache was relieved immediately by the lumbar puncture.

By March 9th there was increasing weakness of the right lower limb and for three days there had been incontinence of fæces. On the 10th cervical laminectomy was performed to expose the lower four segments, and the clinical, serological, and X ray diagnosis confirmed. The meninges were not adherent. The cervical cord was uniformly distended and did not pulsate until the meninges were freely incised. When the incision reached the upper limit of the swelling cerebro-spinal fluid spurted out. The distended cord was explored with a hypodermic needle with a negative result, and incised on its lateral aspect. This incision was closed by a muscle graft. Shreds withdrawn by the needle were found under the microscope to show sarcoma cells. A week later, the 17th, the swelling of the right disc had abated so that it was too slight to measure. On the 21st and 23rd the patient had attacks of unconsciousness followed by severe frontal headache. On the second occasion this was relieved promptly by cistern puncture. On the 31st she was again unconscious for half an hour. On April 1st the right pupil and the right palpebral aperture were seen to be slightly larger than the left. On the 6th the lumbar cerebro-spinal fluid was found to be far less yellow than formerly, and to contain now 0·35 per cent. albumin. There was no swelling of either disc, but in the right fundus there were two small hæmorrhages. The patient had a bilateral infective parotitis.

FIG. 2.

Intramedullary glio-sarcoma expanding the cervical cord; the longitudinal body in the middle of the lower part of the figure is the spinal cord folded back from below. Inches are indicated on the right.

Between April 7th and 15th patient was much confused and for three days she had recognised nobody. Her features were animated and she chattered ceaselessly. The lumbar cerebro-spinal fluid was under low pressure and now almost colourless. The cistern fluid was under very great pressure and spurted out in a continous stream. Cistern puncture relieved the mental state for a day or two. On April 22nd she was again unconscious. The eyes floated aimlessly in the orbits and the corneal reflexes were abolished. Immediately after a further cistern puncture, at which a fluid of moderately increased pressure was withdrawn, the corneal reflexes were re-established and the eyes moved under her control. On April 30th the patient was drowsy but conscious, and her state contrasted greatly with that prior to the last cistern puncture. During the examination a divergent squint was observed for the first time. On May 1st some exudation was seen around the right disc which was not swollen. The left disc showed slight papilloedema. Death occurred on May 4th. Throughout the illness the temperature was subnormal.

At the autopsy the cervical cord, with its cylindrical swelling of tumour, was removed and put aside to be fixed. Fig. 2 shows its appearance on section. The growth had extended to the brain base. There were no deposits elsewhere. The brain showed moderate internal hydrocephalus, notably of the third ventricle. The intrinsic muscles of both hands were much wasted and the hands clawed.

We draw attention to the severity of the headache and the papilloedema in spite of only a partial block

in the subarachnoid channel, to the diagnosis which was made from the shreds withdrawn by the hypodermic needle, and to the duration of fairly comfortable life due to repeated cistern puncture.

THE OXYGEN DEFICIENCY THEORY AND EXPERIMENTAL TETANY.

BY J. ARGYLL CAMPBELL, M.D., D.Sc. EDIN.
(*From the National Institute for Medical Research.*)

THERE are many theories regarding the ætiology and pathogenesis of tetany. All of these will not be dealt with in detail here. Recently Critchley [1] and Barker [2] wrote interesting reviews of them, and from these it is clear that, generally speaking, the favoured theories are (1) calcium deficiency, (2) alkalosis, (3) guanidine intoxication. It must be emphasised that both Critchley and Barker are careful to point out that only future research can elucidate the problem, since none of the theories will at present hold for all types of tetany. In the first place, it is difficult to define tetany. It includes mere hyperexcitability of the neuromyone (i.e., nerve-cell and muscle), and all degrees of tremor leading up to typical convulsions; indeed, it is often difficult to determine where tetany ends and convulsions begin. The brain and the spinal cord are the tissues chiefly concerned in tetany and convulsions.

Because of the resemblance of the phenomena in the various types of tetany and convulsions, many attempts have been made to find a cause common to all types both clinical and experimental, and the favourite theories are apparently the three mentioned above.

There is, however, another theory—the oxygen deficiency theory of Morris.[3] He found that there was hyperexcitability of the neuromyone in anoxæmia produced in various ways: that is by asphyxia, decrease of temperature, anæmia, alcohol, and histamine. He studied the oxygen content of the arterial and venous blood, and in that way any change in the oxygen "head" of the blood. Hitherto this theory has not received very great attention. During the past three years I have been studying the oxygen tension in the tissues. Most of my researches have been published in the *Journal of Physiology*.[4] Some of my results give strong support to this theory of Morris. At once it must be admitted that there are still many gaps to fill before the problem may be regarded as settled. Nevertheless, I give the following brief outline and synopsis of the physiological experiments I have so far completed, in the hope that the oxygen deficiency theory may receive the support which it appears to me to deserve.

Method.

A moderate quantity—a few hundred cubic centimetres—of gas, usually nitrogen, was injected under the skin and into the abdominal cavity of an animal and left there until the CO_2- and O_2-tensions in the gas came into equilibrium with the tensions of these gases in the surrounding tissues. This usually occurred in a few days, the delay being due to the fact that the injection of the gas produced a temporary hyperæmia which required a few days to pass off.

Once constancy had been attained, the tensions remained remarkably constant over long periods of time, until all the gas had been absorbed. It was absorbed very slowly. If 500 c.cm. were injected, some of it still remained at the end of two or three weeks. In this way it was found that the normal CO_2-tensions in these situations—i.e., under the skin and in the abdominal cavity—were about 45–50 mm. Hg, whilst the O_2-tensions were about 20–30 mm. Hg under the skin and about 30–40 mm. Hg in the abdominal cavity of rabbits and cats. Very similar figures were obtained for monkeys, the only difference being that the O_2-tension under the skin was similar to that in the abdominal cavity—namely, about 40 mm. Hg. These tensions do not give the tensions inside the cells, but in the fluid and spaces immediately outside the cell wall.

The presence of the gas cannot be considered a normal condition, but no evidence could be obtained that its presence in any way affected the results. It did not matter what gas or mixture of gases—i.e., O_2, N_2, and CO_2—was injected; the final tensions in a few days were always at the same level of constancy for each animal. Nor did the volume, within the wide limits tested, appear to affect the results. Moreover, the evidence obtained by other methods of investigation confirm these figures I have obtained. The tensions remained constant in any one animal for months—i.e., as long as they were under observation.

The method of injection of gas has not hitherto been used to any extent for the study of experimental alterations in tissue gas tensions, simply because the course of events had never been followed out continuously and carefully over days and weeks. The results given previously for tensions in injected gas were most confusing. Most of the observations had been carried out on patients with artificial pneumothorax, many of whom had pathological conditions in the thoracic cavity. Then, again, the thoracic cavity was a most inconvenient position to work with owing to respiration. It was whilst I was working with gas under the skin of normal unanæsthetised animals that the true course of events shown in Figs. 1 and 2 was established. Reference to my previous paper [5] will give full details of the method.

Having thus established a constant base-line for tissue tensions, it was possible to produce tetany and convulsions in an animal and at the same time to draw off samples of gas at intervals and to study changes in O_2-tension produced by such experiment.

Effect of Experimental Tetany upon the O_2-tension in the Tissues.

In the following description of my experiments I draw no sharp distinction between tetany and convulsions, because it is impossible to separate them.

I produced tetany or convulsions by intravenous injections of guanidine, sodium salts, insulin, water, ammonium salts, cyanides, strychnine, by inspiration of O_2 at low tension, and by parathyroidectomy. In order to study the changes of O_2-tension in the tissues before the actual onset of tremors or convulsions, it was necessary to delay actual tremors and convulsions for some hours if possible, because muscular contraction itself had a marked effect upon O_2-tension, as will be seen later. Tetany was, therefore, induced gradually. In this way it was possible to demonstrate in most cases a marked fall of O_2-tension in the tissues—i.e., in the skin and in the abdominal cavity—before the onset of convulsions. Excessive hyperpnœa also markedly lowered the O_2-tension and it is a well-known cause of tetany. Alcohol, which sometimes causes tetany, had a similar effect upon O_2-tension. So had histamine, which causes increased excitability of the neuromyone [3]; this I include in my definition of tetany.

Results.

The results are grouped together in the table where I have compared the various theories. A fall of O_2-tension before the onset of tetany or convulsions is marked by a positive sign (+). In only three cases of all those tested was this fall of tension absent. These occasions were in cyanide poisoning, strychnine poisoning, and parathyroidectomy. They are very important causes of tetany and convulsions. On further consideration, however, we may remember that in cyanide poisoning the cell behaves as if it were in an atmosphere of nitrogen although oxygen is present; in other words, cyanide poisoning interferes not with the oxygen-supply or oxygen tension outside the cell, but with the intracellular oxidation processes. Now we have no direct proof that this is

the case with strychnine or parathyroidectomy, but there is evidence that strychnine convulsions are modified definitely by oxygen administration,[6] the minimal dose being greater when oxygen is

Table Showing Comparison of Theories.

Experimental condition.	Fall of O_2-tension in tissues before onset of manifest tetany or convulsions.	Alkalosis.	Guanidine poisoning.	Calcium deficiency.
Excessive hyperpnœa ..	+	+	..	..
Guanidine injection ..	+	..	+	..
$NaHCO_3$,, ..	+	+	..	..
Na_2SO_4 ,, ..	+	..	..	..
NaCl ,, ..	+	..	..	∓
Insulin ,, ..	+	..	..	..
Histamine ,, ..	+	..	..	..
Alcohol ,, ..	+	..	..	..
Water ,, ..	+	..	..	..
Ammonium salts injection	+	±	..	..
Anoxæmia ..	+	..	..	..
Cyanide injection ..	..	..	..	..
Strychnine ,, ..	..	..	..	..
Parathyroidectomy ..	..	∓	∓	+

administered. That we did not obtain a fall of tissue O_2-tension in parathyroidectomy is the weak point in the argument, but there is a probability that there is some similar interference with intracellular oxidation processes as described for cyanide. Many hold that in parathyroidectomy alkalosis is the cause of tetany, and I find that an alkalosis produced by other means—injection of alkali—markedly lowered the O_2-tension in the tissues. This fall of O_2-tension is considered to be present also in the tissues of the brain and spinal cord which are immediately concerned in tetany and convulsions.

It will be seen from my series of observations that the O_2-deficiency theory as tested in this way comes out very well when compared with the more popular theories. It will be observed from the table that the guanidine poisoning theory has been supported by evidence from only two of the conditions—i.e., guanidine poisoning itself and in some researches in

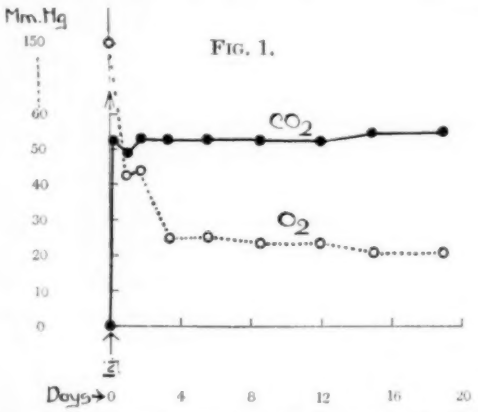

FIG. 1.

CO_2- and O_2-tensions in gas under the skin (rabbit) for 20 days following the subcutaneous injection of atmospheric air (*Jour. Physiol.*).

parathyroidectomy. The alkalosis theory has been supported by the evidence from excessive hyperpnœa, from injection of sodium bicarbonate, and from some observers' results with parathyroidectomy. The calcium deficiency theory is supported strongly by observations in parathyroidectomy [7] and in injections of some sodium salts.[8] This table may be incomplete, but, in so far as I am able to fill in the gaps from experimental evidence, the O_2-deficiency theory holds its own easily with the other theories, if there is one and only one common cause for the various types of tetany. This, of course, need not be the case.

Ætiology of Tetany.

There is yet further evidence in favour of the O_2-deficiency theory. When the actual tremors and convulsions developed, the O_2-tension in the tissues was markedly improved, on an average by 25 per cent. above normal. It would seem that the purpose of the muscular contraction was to increase the O_2-tension in the tissues. I have observed this marked rise of O_2-tension following ordinary muscular exercise and in every type of convulsions I have so far studied. These were tremors and convulsions following administration of cyanide, strychnine, insulin, and parathyroidectomy. Not only were the objective phenomena so very much alike in all these types but the O_2-tension was equally well raised by all of them.

I have endeavoured to determine how this rise of O_2-tension was produced, and found that a marked rise of O_2-tension followed production of acidosis by certain doses of such salts as NH_4Cl and $CaCl_2$, and also following the injection of certain doses of heart stimulants—e.g., caffeine and ammonia. I have also found that a rise of body temperature produced

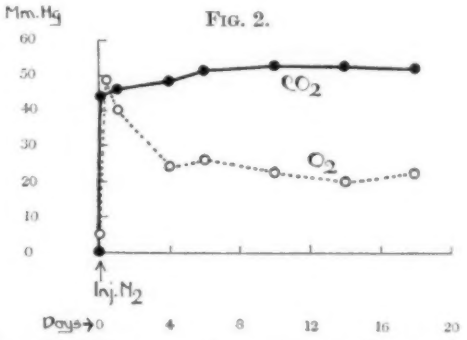

FIG. 2.

CO_2- and O_2-tensions in gas under the skin (rabbit) for 18 days after the subcutaneous injection of nitrogen (*Jour. Physiol.*).

a slight rise of O_2-tension in the skin but not in the abdominal cavity. I have concluded in favour of tissue acidosis as the chief cause of the rise of O_2-tension following muscular contraction, the increase of acidity accelerating the liberation of O_2 from HbO_2. Perhaps, also, it relieves the nerve-cell in its internal oxidation processes in some way. In support of this we have evidence that administration of NH_4Cl and $CaCl_2$ are of value in the alleviation of tetany. Administration of O_2 is of value in some types of tetany and convulsions but not in others, perhaps because in these cases the cell cannot use O_2 although it is there.

It may be argued why is it that we do not get tetany and convulsions in such cases as fainting. Here, obviously, the heart is weakened; there is a paralytic factor which probably prevents tetany; it is not likely that tetany or convulsions would be of any value if the heart is weak; the heart would not be able to stand it. In a convulsion respiration stops, O_2 diminishes and CO_2 accumulates for a time, and this itself weakens the heart. Yet in spite of this the O_2-tension in the tissues is markedly raised above normal after a convulsion. We also know that the general condition of an animal is often greatly improved by a convulsion—e.g., after insulin convulsions, and after parathyroidectomy, &c.

In clinical tetany the disease seems often to be selective, picking out a group of cells here and a group there. It is in these nerve-cells that we shall have to look for the cause of the disorder.

Summary and Conclusions.

The experiments described support the oxygen deficiency theory of Morris in the ætiology of tetany. It is shown that in many different experimental

conditions in which tetany eventually occurs, the tissue O_2-tension is markedly decreased before the onset of the tremors. It is shown also that muscular contraction causes a marked increase of O_2-tension in the tissues, and it is tentatively suggested that the purpose of the muscular contraction in tremors and convulsions is to supply O_2 at increased tension in the tissues.

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Clinical and Laboratory Notes.

A CASE OF ISCHÆMIC NECROSIS OF THE HEART MUSCLE

SHOWING EVIDENCE OF EMBOLISM ELSEWHERE.

BY GEORGES KLIONSKY, M.B., B.S. LOND., M.R.C.S. ENG.,
RESIDENT MEDICAL OFFICER, WORCESTER GENERAL INFIRMARY.

THE following case of a near relative of mine appears to illustrate well the clinical syndrome described by Dr. A. G. Gibson in THE LANCET of Dec. 19th, 1925, especially in regard to his reference to cases of embolism following the condition:—

The patient, a man of 53, had for some months preceding the attack to be described, complained of præcordial pain, aggravated by exertion, undoubtedly anginal in character. One evening in December, 1924, the pain became more acute and he felt faint, but soon recovered and was up and about the next day. On retiring to bed that evening, he had acute retrosternal pain and lost consciousness. His breathing, from the description given me, would appear to have been stertorous, and his condition was considered very critical. After two or three hours, however, he regained consciousness, but the next evening, when I saw him, he had amaurosis (but said he could see patches of red "resembling roses" in front of him) and he had right internal strabismus. The heart's action was weak, and there were no signs of valvular disease. There was no paresis anywhere else at that time, but he complained of severe headache, especially in the occipital region, and this continued for two or three days. Examination of the fundi showed multiple hæmorrhages and extensive œdema of both retinæ. The blood pressure was 110 mm. Hg (systolic). No abnormality was detected in the urine. The blood-urea was normal and the Wassermann reaction negative. An X ray photograph of the chest showed slight enlargement of the first part of the aorta. There was no history of rheumatic fever.

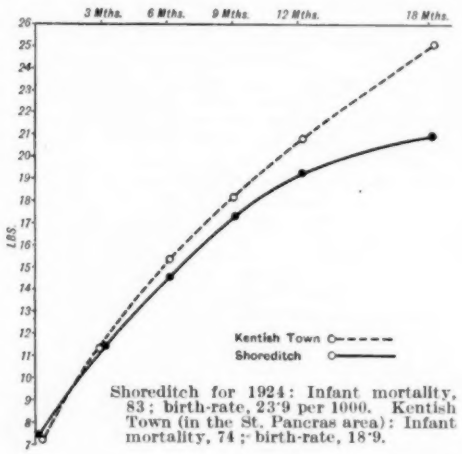
The patient gradually recovered, the retinal œdema slowly disappeared, and the hæmorrhages became absorbed. The strabismus also soon disappeared. At the present day his sight is sufficiently good to enable him to read newspapers and letters, but he still suffers from retrosternal pain, accentuated by exertion.

I think, in view of Dr. Gibson's paper, that the case, clinically at any rate, would appear to illustrate a sequence of events somewhat as follows: Atheroma of the first part of the aorta, with probable involvement of the coronary arteries; either thrombosis of a branch of a coronary artery or embolism due to the separation of a small plaque in the aorta; ischæmic necrosis of the heart muscle supplied by that branch; deposition of clot on the inner surface of the heart wall, resulting in the formation of emboli in the brain (one definitely causing the strabismus) and in the retinal arteries (causing the hæmorrhages, with secondary œdema of the retinæ). The case at the time offered considerable difficulty in diagnosis to the medical attendants.

COMPARATIVE RESULTS IN INFANT WELFARE.

BY AMY HODGSON, M.D., D.P.H. LIVERP., M.R.C.P. LOND.

IT is a common practice to estimate our results in connexion with infant welfare work by means of the infant mortality figure. It has always been assumed that mortality and morbidity go hand in hand. I do not know of any evidence that such is necessarily the case. In the accompanying chart I have contrasted the average weight of a series of children under my care in Kentish Town with another such series in a generally "lower" district—Shoreditch. 300 children in all, attending the clinics fairly regularly, enter into the curve shown. It will be seen that the Kentish Town curve corresponds so almost exactly with the normal curve of various authorities (Holt, Pritchard, &c.) that it is difficult to mark both on the chart. The Shoreditch babies were actually larger at birth (7 lb. 6 oz., as against 7 lb. 3 oz. in Kentish Town), and held their initial advantage until 3 months of age. From that time there is a gradual falling off, which becomes more marked from the time the children get on to general food. I may say that a sufficiency of milk was ensured throughout in each case. This was issued from the centre (usually as dried milk) and actually *given* whenever necessary. When the child was breast-fed, milk was obtained for the mother in necessitous cases. It was found impossible to prolong the curve beyond 18 months, as the attendances became irregular, and the average is taken from too small a number of children.



Shoreditch for 1924: Infant mortality, 83; birth-rate, 23·9 per 1000. Kentish Town (in the St. Pancras area): Infant mortality, 74; birth-rate, 18·9.

I attributed the less good results we were able to obtain in Shoreditch to the accumulated effect of difference in conditions which I observed from the time the children first came up to the clinics in their respective areas. The Kentish Town babies were better off as regards (1) clothing; (2) general standard of mothering—the Shoreditch mothers being definitely more "elementary" in type; for the most part, they were supremely satisfied with their own standards of life; (3) facilities for fresh air and open-air life (Kentish Town is near to Hampstead Heath and to Parliament Hill Fields).

From the point of view of the health authorities, I should say that both areas were efficiently visited. The feeding in both clinics was the same, though, generally speaking, in Shoreditch the directions given were less faithfully observed. The attendances at the centre were less regular in Shoreditch. Housing conditions are bad in both areas. There is no evidence that any of the factors mentioned came into operation before the age of 3 months. Two further factors

(of serious import to the Shoreditch babies) come into operation from 6–9 months: (1) The imminence of another baby—the children followed more rapidly one upon the other in the family in Shoreditch. This gives rise very constantly to a falling off in care. (2) The poor quality of general food obtainable for the children.

While a fat or vitamin deficiency was avoided by the free issue of cod-liver oil, there was certainly a deficiency of easily digested protein of good biological value—e.g., egg—in the case of the Shoreditch children. They lived too much upon bread, as the fresh fruit and vegetables ordered could not be afforded them. The mothers did not make broth; many mothers had very little knowledge indeed of cooking, and so were quite unable to make the best of the food available. The Ministry of Health are at present conducting an exhaustive inquiry into the health of children under school age. May we hope that a systematised comparison, on the one hand, between class areas and standards and, on the other hand, between financial conditions operating, will form part of any report on such inquiry?

I am much indebted to the authorities in Shoreditch and Kentish Town for permission to publish these figures.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FEVER HOSPITAL MEDICAL SERVICE GROUP.

A MEETING of this Group was held at the Society's house in London on Dec. 18th last, when Dr. F. H. THOMSON, the President, occupied the chair, and Dr. JOHN CHURCHILL BLAKE, assistant medical officer, N.E. Hospital, M.A.B., read a paper on the

SCHULTZ-CHARLTON (BLANCH) REACTION [1] IN SCARLATINA.

In the series to be considered, he said, horse serum only was used. It may be injected into any part of the trunk or limbs provided that the rash is bright and not too coarse; but in most cases in his own series the chest and abdomen were chosen. The dose in all cases was 0·2 c.cm., and a very fine needle should be used in order to avoid deep injection or bleeding, which may obscure the reaction. In tests for diagnostic purposes the dilution should not be higher than 1 in 10, and in his series the percentage of positive results would certainly have been higher if this had been adhered to; but in a large number of cases 1 in 100 was the lowest dilution used. The time before blanching occurs varies from 4 to 5 hours to 36 hours. Where several dilutions are used on one patient the period seems to be longer the higher the dilution; there is a difference of about two hours between 1 in 10 and 1 in 100 and so on. The age of the rash, at any rate during the first three days, does not appear to have much bearing on the time taken for serum to cause blanching, and intervals of 4–6 hours are quite common on the third day. (On the fourth day the period is considerably longer.)

The maximum area in any case, said Dr. Blake, was 1½ in. in diameter. The size varies with the degree of dilution but not proportionately, being usually ¼ in. between 1 in 10 and 1 in 100. Blanching may be complete or a faint rash may be present, and a central area of apparent inflammation, quite distinct from the redness caused by the puncture of a small vessel, has been observed in several cases. Usually the reaction lasts for at least 24 hours and often until the rash has disappeared. The area gradually increases in size until it attains its maximum, when it either remains stationary or gradually recedes, the rash returning in the blanched area until the site of injection can no longer be recognised.

In the majority of Dr. Blake's cases the test was not used for diagnosis but to provide information by which the blanching titre of the serum could be estimated. With most of the batches used blanching was obtained up to 1 in 500. As the "age" of the rash increased serum injected intradermally became less effective. On the first day (65 cases) the percentage of positive results was 78; the fall in efficiency was gradual up to the third day, and there was a big drop to 37 per cent. (eight cases) on the fourth day. The total percentage of positive results was about 73. Probably the percentage of positive results on the fourth day was higher than it should have been owing to the small number of cases, but blanching can certainly be obtained on the fourth day in some cases, although the rash has usually disappeared before the serum has time to take effect. Where the rash is still bright on the fourth day the reaction is generally negative even with 1 in 10 dilution. In several instances serum was given intramuscularly at the same time or a few hours before the Schultz-Charlton injection, and blanching occurred in all except two cases. This procedure, said Dr. Blake, might prove useful as an indication of the efficacy of the serum, the same serum being used in each case, especially if a second dose was considered advisable.

In order to test the specificity of the reaction it was tried with rashes which were known or suspected not to be due to scarlet fever; in all cases dilutions of 1 in 10 as well as higher dilutions were used. These cases included: One prodromal measles rash, five measles, one prodromal chicken-pox, two rubella, two serum rashes, two food rashes, three cases of erythema, one septic rash. No blanching occurred in any of these cases. Ten patients were injected intradermally with normal horse serum; in one case slight blanching was reported. In addition to the blanching titre, the Schultz-Charlton reaction shows the length of time that serum retains its antitoxic properties. A batch set aside for one month (in refrigerator) and used again gave good results.

Discussion.

Dr. R. A. O'BRIEN, director, Wellcome Physiological Research Laboratories, said that he could not help feeling that the Schultz-Charlton reaction is a measure of what is happening therapeutically. Presumably, therefore, so long as antitoxin can neutralise toxin in the skin, antitoxin will be useful therapeutically, though this is not yet proved. It has been shown that the Schultz-Charlton reaction is effective up to the seventieth hour, but the likelihood of its being positive after that time is small. The general tendency has been for serum, when given in toxic cases, to be efficient up to the third or fourth day, but after that period its efficiency is lessened. Dr. O'Brien considers that much bigger doses than those used by Dr. Blake could be given, and although in the work of his laboratory 0·2 c.cm. was the dose used, it was not clear that they were not losing by so limiting it. It is possible, he said, that by the use of a larger dose the number of positives might be increased. The fact that blanching has been obtained with 1/500 and 1/1000 dilutions is of especial interest. Whether or not that is a measure of the antitoxic value of the serum is a matter open to question. In his own view the method of judging the value of a serum by obtaining passive immunisation of a Dick-positive reactor is a very difficult one to carry out.

Dr. J. E. MCCARTNEY, director of Research and Pathological Services, M.A.B., suggested that the Schultz-Charlton reaction might be very useful to determine whether or not there are two distinct

[1] In 1918 W. Schultz and W. Charlton stated that intradermal injection of serum taken from a normal person or from a convalescent case of scarlet fever into the skin of a person suffering from bright scarlet fever rash is followed by blanching of an area around the site of injection. W. Mair has shown that the serum of a normal person does not produce the effect unless he has been immunised against scarlet fever. More recently the serum of horses immunised by means of the hæmolytic streptococcus has been used in doses of about 0·2 c.cm. The test has been applied to a number of rashes due to other infections and it is said that no blanching occurs.

types of scarlet fever. Those which gave negative results in Dr. Blake's series might possibly have been cases of a different type of the disease. Special attention should be given to these negative cases.

Dr. WILLIAM MAIR, research pathologist, M.A.B., said that he has had no difficulty in giving 0·75 c.cm. of undiluted horse serum without causing any appreciable discomfort. Slight discomfort is produced at the beginning of the injection, but as soon as 0·1 c.cm. is given it appears to have a numbing effect on the nerve-endings and no further trouble is experienced. He believes that occasionally horse serum gives the reaction in a very mild degree, and in some cases there is a blanching indicating that there is at times a small amount of natural antitoxin in the normal horse. This is not surprising since the horse is subject to streptococcal affections and also to immunity of some kind. The whole question, added Dr. Mair, is of great interest from the point of view of the ætiology of scarlet fever.

Dr. W. M. MACFARLANE, Birmingham City Hospitals, stated that he has used the Schultz-Charlton reaction with very satisfactory results and has also given convalescent serum in many cases. With various sera the reaction usually persisted until the rash faded, whilst with convalescent serum it certainly did so in all cases. The batches of sera varied. In some instances blanching was produced in 18 hours with 1/1000 dilution, and in others in six hours with 1/10 dilution.

Dr. D. MACINTYRE, medical superintendent, Plaistow Fever Hospital, said that he has had difficulty in getting 1 c.cm. into the skin. The majority of cases arrive at his hospital after the third day.

The PRESIDENT said that from the clinical point of view he considered the Schultz-Charlton reaction a very promising one. It had helped in diagnosis on several occasions in his own experience, and had been of great value in cases in which there was doubt. He agreed with Dr. O'Brien that it would probably be of advantage to increase the dose, and said that he understood that when Dr. Mair was doing tests with 0·75 c.cm. there had been practically no inconvenience to the patients. Mentioning one or two cases in which the blanching lasted some two days after the rash had gone, he said that this was accounted for by the exceptional whiteness of the skin; no desquamation followed in the particular area that had been blanched. Though this phenomenon did not occur in all cases it might occasionally be encountered.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A MEETING of this Section was held on Dec. 18th last, Dr. D. G. MADILL, the President, being in the chair.

Hyperemesis in Early Pregnancy.

Dr. GIBBON FITZGIBBON, Master of the Rotunda Hospital, read a paper on this subject.

The PRESIDENT said that reflex hyperemesis was understood to be due to some pelvic lesion, but he had not a great deal of faith in reflex hyperemesis, except in cases of erosion which were being treated and in which actual manipulation of the cervix might produce it. Even in non-pregnant cases manipulation of the cervix would produce vomiting if it was continued for long enough. He was not a great believer in neurotic vomiting, as plenty of neurotic patients went through pregnancy without any hyperemesis. Personally, he thought that about 99 per cent. of cases of hyperemesis in early pregnancy were toxic. In cases of reflex or neurotic hyperemesis no such post-mortem lesions in the liver and kidneys were found as were seen in cases of extreme hyperemesis in the later months of pregnancy. Hyperemesis ended at about the end of the fourth month of pregnancy—the time when the action of the trophoblast was most severe—and he was of opinion that if a patient got over the fourth month she would get through all right. In all these cases blood and urinary examinations should be made. In early cases of severe morning sickness he put the patients on a milk diet and purgatives, and every time they drank milk, or even milk and soda, he made them lie down for an hour afterwards; by doing this they were much more likely to retain food. He kept them on this régime for a month, and then if they were better he stopped it; but if they were not better he put them on complete starvation and elimination. He found in these cases that doses of glucose and bicarbonate of soda were effective. Before he emptied the uterus he would try giving the patient corpus luteum extract. If hyperemesis was due to migration of chorionic villi injections of placental extract might help. Obstruction of the bowels was, he thought, a predominant factor in most cases.

Neurosis or Toxæmia.

Dr. L. CASSIDY said that he did not agree with the President that obstruction of the bowels was a predominant factor in hyperemesis. If it were so, hyperemesis would surely be much more common, since constipation was very usual in pregnancy. In the case of a girl aged 24, who had vomited continuously for three weeks and was in a very bad state, a rectal enema was given, and sodium bicarbonate, and three bougies were passed without any effect. After this Cæsarean section was done, and the patient never vomited afterwards. In cases of this kind it was rather difficult to put toxæmia out of mind. Acidosis was present in most cases, but this would be found in any case of starvation. He was of opinion that there was a neurotic element in a large number of cases of hyperemesis. He thought that Dr. FitzGibbon's experience of two fatal cases must be unusual, as he had recently read a report on a German authority who had treated thousands of such cases and had had very few deaths. A certain number of women were very desirous of terminating pregnancy and would adopt any means to bring it to an end short of inducing abortion by physical means. Referring to the fact that hyperemesis only occurred up to the fourth month of pregnancy, he said that he thought there was little doubt that a certain number of these cases might be due to inability of the maternal tissues to deal with the products which they contained. It was possible that some dysfunction of the corpus luteum might also be responsible for causing sickness.

Importance of Misplacement.

Dr. J. S. QUIN said that he quite agreed with Dr. FitzGibbon about the neurotic element in cases of hyperemesis, and thought that the strongest argument in favour of this was the extraordinary variety of methods of treatment which were brought forward, all of which had good results. In a condition which was cured by so many diverse methods of treatment he thought it was fair to assume that they all acted by suggestion. The essential thing in treating all these patients was to remove them from their immediate surroundings. In these cases he believed that often there was misplacement, and when a patient complained of vomiting the first thing to be done was to make sure that this was not the cause.

Dr. D. CANNON, referring to the fact that hyperemesis was supposed to be due to starvation and dehydration, said that if this were true he did not see what good emptying the uterus would do.

Dr. A. H. DAVIDSON said that recently it had been suggested that blood serum from a normal pregnant woman should be given to women suffering from hyperemesis.

Dr. FITZGIBBON, in replying, said that he had no doubt about reflex hyperemesis being present in the early months of pregnancy. Erosion as a cause in such cases was absurd. In nine cases out of ten

the cause of the hyperemesis was retroversion. Neurotic vomiting invariably ceased at the fourth month, when the uterus ceased to be a pelvic organ and began to be an abdominal organ. He did not at all advocate emptying of the uterus as a cure for cases of hyperemesis. He believed that the death of one of his patients was due to starvation, which was so far advanced that he could not relieve it. Vomiting in early pregnancy was, he thought, nearly always neurotic. Sometimes hyperemesis was associated with hydatid moles, but in his first two years at the Rotunda Hospital he had had a good many of these cases and did not think that any of them were associated with vomiting of which notice would be taken. Acidosis in these cases was, he believed, the result of tissue wasting, from starvation. His second fatal case was one in which he had induced labour. It was said that chloroform was the cause of tissue or liver degeneration, but he had given both chloroform and ether in toxæmic conditions without any bad effect.

Ovarian Dermoid in a Child.

Dr. CANNON showed an ovarian dermoid removed from a child aged 9 years, which had produced acute vomiting, some fever, and tenderness and rigidity of the lower abdomen. A tumour was felt and a pre-operative diagnosis of ovarian cyst was made. The abdomen was opened, and a tumour found occupying most of the pelvis, the left lobe of which was congested and red. There was no blood-stained fluid and no torsion, and a small pedicle. The other ovary was normal.

The PRESIDENT said that this was a very rare and interesting specimen. It was, he thought, idle to speculate about the origin of dermoids; but it was known that they occurred at all ages and in both sexes, sometimes up to 70 years of age, as well as in unborn children. They were generally painless, but had a great tendency to become malignant, even in young patients. It was interesting to note that one piece of the ovary was left perfectly healthy in the tumour.

Dr. FITZGIBBON said that he had never seen a case of this sort in a child as young as 9 years; the tumour was very large to be found in so young a patient. The combination of a multilocular cyst and the dermoid was very interesting, as it showed that there was another definite pathological growth in the ovary as well as the dermoid.

Dr. CANNON, in replying, drew attention to the similarity between cases of ovarian cyst and of abdominal tuberculosis, and referred to a patient he had recently seen who had been treated for abdominal tuberculosis till breathing became difficult, and at operation had been found to have an ovarian cyst under the liver.

Reviews and Notices of Books.

RESPIRATION IN DISEASE.

Respiratory Function in Disease. By JONATHAN C. MEAKINS, M.D., C.M. M'Gill, F.R.C.P., F.R.S. Edin., Professor of Medicine, M'Gill University; Physician in Chief to the Royal Victoria Hospital, Montreal; formerly Christison Professor of Therapeutics in the University of Edinburgh; and H. WHITRIDGE DAVIES, M.B., B.S. Adelaide, Lecturer in Methods of Clinical Investigation in the Department of Therapeutics, University of Edinburgh. London and Edinburgh: Oliver and Boyd. 1925. Pp. 492. 28*s.*

THIS should become a standard work on respiration in disease. In some ways it may be regarded as the companion to Prof. J. S. Haldane's lectures on Respiration which have been recently published in book form.

After a historical résumé, a section on normal respiratory function gives in a very readable form a short, succinct description of the physiology of respiration, including all the recent work. An account of hæmo-respiratory function in disease, which occupies about half of the book, is especially valuable as it contains not only the authors' views on the various disputed points clearly expressed, but embodies much of their own experimental work as well as that of others. In a chapter on vital capacity in disease the authors hold the same view as some other investigators—viz., that the vital capacity in health shows considerable variations, so that it cannot be safely used as a standard of physical fitness or as a means of diagnosis in individual cases of pulmonary tuberculosis. There is a short chapter on the basal metabolic rate. A further chapter on the therapeutics of respiratory disturbances throws doubt on the action of the ordinary so-called respiratory stimulants. The methods of oxygen administration are clearly described and analyses are given showing the relative advantages of the different methods. Emphasis is laid on the importance of administering CO_2 as well as oxygen in the treatment of poisoning by morphia and carbon monoxide. The book is completed with a valuable chapter on methods of investigation. There is an exhaustive bibliography which contains some 400 references.

Such a book, dealing with a subject in which knowledge is advancing almost daily, will certainly require further editions at not too long intervals of time. It is on this account that the following suggestions on matters of detail are made. The authors infer that the radiogram of the heart shows its contour during systole, but surely this is only the case if a carefully timed and momentary exposure is employed. The ordinary ortho-diagram of the heart, taken with an exposure of some seconds, is usually regarded as representing the heart's shadow in diastole. Whilst it is probably true that bronchitis by itself is not a cause of breathlessness, the authors attribute the breathlessness so common in chronic bronchitis to emphysema, though it would seem at least equally likely that coexisting asthma is responsible. The fact that they quote with approval the statement that in emphysema the prolonged expiratory sound is characteristic, suggests that they have neglected the asthmatic element in their cases, for it is usually held that in pure emphysema the breath sounds are diminished and that it is only when asthma is present that the expiration becomes prolonged. The very small section devoted to the blood changes in congenital heart disease might well be further expanded. The authors do not give enough credit to Pembrey and Allen who gave us all our present knowledge of pathological Cheyne-Stokes respiration. Douglas and Haldane repeated their observations on Cheyne-Stokes breathing artificially produced. The headings of the pages have not been varied sufficiently, so that between pp. 92 and 233 it is impossible to find out at a glance what particular hæmo-respiratory function is being dealt with. Finally, in a future edition it would perhaps be better to incorporate the frequent footnotes in the text.

The excellent way in which the data are presented makes it possible for the reader to draw his own conclusions, which is very necessary in a subject developing so rapidly. The work should be useful alike to the advanced student, the research worker, and the general physician, and is thoroughly to be recommended.

Dyspnœa. Medicine Monographs. Vol. V. By JAMES HOWARD MEANS, Harvard Medical School. London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins Company. Pp. 108. 11*s.* 6*d.*

Prof. Means has written an excellent short account of dyspnœa in the present book. The matter is well arranged and the arguments are clearly expressed. About two-thirds of the book deal with the causes of dyspnœa in disease, which are classified under the

headings: Dyspnœa associated primarily with Increased Metabolism; Dyspnœa associated primarily with Disturbance of Acid Base Balance; Dyspnœa associated primarily with Difficulty in Oxygen Transport; and Dyspnœa associated with Mechanical and Nervous Hindrances to the Respiratory Movements. In this section there is a discussion on reduced vital capacity. Then follow sections on cardiac dyspnœa and on dyspnœa in pneumonia. The early part of the book is devoted to the physiological aspect of the subject, whilst the last chapter deals with treatment. There is an excellent bibliography, and the book can be recommended as a short readable account of recent work.

THREE SURGICAL MONOGRAPHS.

Edited by DEAN LEWIS, A.B., M.D., EUGENE H. POOL, A.B., M.D., and ARTHUR W. ELTING, A.B., M.D. London and New York: D. Appleton and Co. 1925. Each 21*s*.

1. *Peritonitis.* By J. GARLAND SHERRILL, M.D., F.A.C.S., Colonel M.O.R.C., U.S. Army, formerly Professor of Surgery, Kentucky University and also of the University of Louisville. Pp. 397.

THE series of surgical monographs, of which this is one, published under the editorship of three distinguished American surgeons, bids fair to fulfil admirably the objects which the editors have had in view. They have wisely chosen such subjects as visceroptosis and diseases of the spleen, of which the literature, though extensive, is scattered and sometimes difficult of access. A great service has been done by the presentation of comprehensive reviews of these debatable provinces of surgery. Future workers will have not only a basis of knowledge from which to start out, but they will gain from the experience of an authoritative writer. The present volume on peritonitis conforms to the general plan of these monographs, but does not quite reach the high standard of its predecessors. The book is too large for the subject, so that a number of irrelevant matters are dealt with, or at least subjects such as cholecystography and the treatment of uncomplicated gastric ulcers, which have but a slender connexion with peritonitis. On the other hand, when we seek information about Ochsner's method of treatment, or proctoclysis or laparoscopy, we do not find the details which we might expect in a monograph of this size. The author's experience of perforated gastric ulcers is peculiar. He declares that perforation takes place mostly on the posterior wall and that the exudate is more or less limited to the lesser peritoneal sac. He ends by saying "the lesser curvature or the anterior wall may be the site of perforation in a small number of instances." Only nine lines are devoted to the surgical treatment of peritonitis from ruptured gastric ulcer in this section, though the treatment of uncomplicated gastric ulcer occupies nearly three pages. The author is at his best when he speaks of his own experience. He has been impressed with the results of gastric lavage in peritonitis, which have forced him to conclude that much of the toxæmia in grave cases is due to absorption from the lumen of the alimentary canal.

There is much useful information within the covers of this book, and a good bibliography is attached to each chapter.

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2. *Fractures of the Humerus, Radius, and Ulna.* By E. L. ELIASON, A.B., M.D., ScD., F.A.C.S., Professor of Clinical Surgery in the University of Pennsylvania Medical School. With the collaboration of R. GOLDSMITH, M.D., Instructor in Surgery in the same Medical School, and E. P. PENDERGRASS, M.D., Instructor of Radiology, Post-Graduate School of Medicine, University of Pennsylvania. Pp. 307.

THE literature dealing with fractures is already immense, but the vast proportion of it was written prior to the adoption of numerous X ray improvements, and it is principally for this reason that this volume has been prepared. Although it is now many years since the X rays first entered seriously into practical surgery, yet of recent years the improvement in apparatus and in technique has been so great that the diagnosis and the control of fractures have reached something of finality. The fine focusing tube, the duplitised film, the high-power tubes of the Coolidge type, and stereoscopic photography are examples of this great advance in equipment. The first part of the volume deals with the normal anatomy of the three bones with an extensive series of radiographs illustrating the progress of bone formation through the years of growth. There follows excellent advice on the duties of the radiologist, the general rules governing the radiological examination, and the indications which control the necessity for rontgen photography. A short general review is given of the symptomatology, examination, treatment, complications, and sequelæ of fractures of the upper extremity. This section contains in outline form some of that common-sense information which many students consider so elementary as to be beneath their notice; yet it forms the basis of the successful intercourse between doctor and patient. The fractures of the upper end and shaft of the humerus are well dealt with and the recommendations for treatment show little difference from that commonly accepted in this country. The section on fractures at the elbow-joint is full of interest, and the author's results in this class of case seem unusually good. The method of hyperflexion and complete supination after perfect reduction insisted upon here was taught originally by Sir Robert Jones; but in the original description of Jones's method the hand was suspended by the wrist by a band around the neck, which destroys the complete degree of supination. Eliason has noted this and recommends that the limb should be maintained in plaster-of-Paris in a very useful manner. The chapters on the radius and ulna are well done, but exclude Colles's fracture as this is dealt with in a separate volume in the series by another author. The book ends with chapters on the treatment of compound fractures and of delayed and non-union. There are 303 illustrations. The book is well presented, and forms a valuable addition to the literature of this subject.

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3. *Traumatic Injuries of the Carpus.* By KELLOGG SPEED, M.D., Assistant Professor of Clinical Surgery, Rush Medical College of the University of Chicago. Pp. 197.

THIS is a companion volume to the one reviewed above, and it contains the fractures at the lower end of the radius as well as those of the carpus itself, Colles's fracture being omitted from the other work—an arrangement which makes the title of this volume inappropriate. The anatomy of the wrist-joint is adequately dealt with, and the radiographic and descriptive presentation of the morbid pathology is good, but the section on treatment is disappointing. As a general rule, the Colles's fracture is badly treated for the reason that the fractured ends are not disimpacted. Until this is done any attempt at reduction must be futile. The description on p. 47 of this book in no way emphasises this important point. The only other reason for bad function after reduction is that the radial deviation of the lower fragment is allowed to persist. This is not recognised by Dr. Speed, and it is definitely laid down that there is no need to put up the hand in the ulnar deviated position. Apart from this, the treatment advocated is the maintenance of the wrist and hand in flexion upon a plaster splint. This method, especially when combined with ulnar deviation, gives results greatly superior to the old methods of Carr's and similar splints.

The second part of the book is much better in every way than the first. The description of the fractured scaphoid and dislocated semilunar are admirable. There are 164 illustrations, many of them simple line drawings. We fail to understand why the price of this book is the same as Prof. Eliason's, which has nearly twice as many pages and illustrations.

MEDICINE AND THE LAW.

Evidence or Opinions Reflecting upon Absent Practitioner: Want of Legal Remedy.

THE recent suicide of a young barrister at Stoke Newington received additional publicity because his death was believed to have followed psycho-analysis. According to the report in the *Times*, the coroner for Central Middlesex, giving evidence as an old friend of the family of the deceased, stated his belief that there were cases in which psycho-analysis would do good, but that in the majority of cases, and especially in such a case as this, it did harm. The coroner for Hackney, who was holding the inquest, subsequently observed to the witness, "Obviously psycho-analysis can come up against people who are suicidal, and who would in any case commit suicide; having allowed for possible usefulness in some cases, you say that psycho-analysis is sometimes a danger?" Whereto the witness replied: "It can be a very dangerous weapon." These general statements were moderate enough, but the witness also gave his opinion that the cause of the condition of the deceased was the psycho-analytical treatment he had received. From this and other comments the public would not unnaturally infer that the system of treatment is discredited and that the practitioner who administered it made at least a grave error of judgment. It therefore seems unfortunate that this practitioner was not offered an opportunity of giving evidence in defence and explanation of the treatment he administered. One can imagine cases, containing perhaps more serious and specific allegations, where a doctor's reputation might be gravely prejudiced by *ex parte* statements to which he had no chance of reply. It will probably surprise the medical profession to find how little legal remedy the practitioner has in such a contingency. The matter, indeed, is not so much one of law as of practice. As a matter of law a coroner has wide latitude in conducting his inquisition. He can call whatever witnesses he thinks may help the object of his investigation. They may wander unchecked into matters of hearsay or of personal opinion. The coroner is not confined by the rigid rules of evidence and relevancy which fetter other courts, for he is holding an inquiry and not a trial. He is collecting facts which may lead to criminal proceedings, but he is not arraigning an accused person upon a formal indictment. If he exclude hearsay evidence or vague expressions of opinion on the ground that a judge trying a prisoner at assizes would rule such matters out, then he may be rejecting some valuable clue; in the familiar words ascribed to Mr. Justice Wills in the Crewe murder trial some 30 years ago, he may be throwing away much of the remaining usefulness of the coroner's inquest. But, if free from the restrictions of a judge, the coroner has a judge's privileges. He cannot be sued for what he says or does in the exercise of his judicial functions, unless, indeed, he acts in excess of his jurisdiction. No slander action will lie against him for his summing-up. His inquest might be quashed if there were a miscarriage of justice as a result of excluding evidence which might have thrown light on the matter; but interference of this kind is rare and the justification for it seldom arises. Criticism of the conduct or qualifications of a man who may not himself be a party to the proceedings before a court is one of the hardships of all English procedure. In an action between A and B, or in a criminal prosecution of C, the most venomous evidence may be given and the severest forensic and judicial observations may be made against X, and yet X may have no right whatever to intervene in his own defence. It is common knowledge that in many cases of fraud or violence the defendant tries to throw the blame on someone else, often on someone not before the court. Counsel may be present to hold a watching brief for the person thus attacked, but the judge cannot be compelled to hear counsel on his behalf and, indeed, frequently refuses to do so. With his less restricted powers the coroner can be more generous. The judge is bound to confine the proceedings to prescribed issues narrowed down to the smallest compass; the coroner is not. It would therefore be a welcome procedure if it were made an invariable rule at inquests that, where a medical practitioner is directly or indirectly criticised, adequate opportunity should be given him to explain or defend himself. In the High Court of Parliament there is an excellent and honoured tradition that, if a member is to be attacked, he should have notice so that he may be present to reply. A similar tradition might well be encouraged in other courts. The circumstances are different, but the principle of fair play is the same.

Action for Fees: Unsuccessful Defence of Professional Negligence.

Professional negligence is a sufficient defence to a claim by a practitioner for professional fees. But, as Lord Halsbury's "Laws of England" pointed out, the patient cannot evade the payment of fees merely by saying that the treatment was ineffective or mistaken, unless the mistaken treatment is the result of ignorance or negligence. And it is not negligence for a doctor to give an opinion which is afterwards found to be wrong, provided that the opinion was not given negligently. This principle of law is illustrated by a recent case in the Harrogate county court, in which Dr. James N. Todd sued Mr. R. S. Wigan, a retired solicitor, for 14 guineas for professional services rendered. The defence was an allegation of incompetence and erroneous diagnosis. The county court judge awarded Dr. Todd the full amount of his claim and special costs. From the report of the case in the *Yorkshire Observer* it appears that the defendant did not dispute the amount of the fees, but contended that the plaintiff had displayed a want of competent and ordinary care and skill in successively diagnosing several diseases. It was stated that Dr. Todd had been called in to the defendant in March, 1921, when he diagnosed blood pressure; on the following day, it was said, he diagnosed jaundice; afterwards he said he feared cancer, and at a later date he suggested diabetes. These statements, on behalf of the defence, were combated by the plaintiff. Mr. Herbert Frankling, a surgeon of Harrogate, and Mr. L. R. Braithwaite, a surgeon of Leeds, gave evidence on behalf of Dr. Todd, and there were other medical witnesses. In giving judgment his honour Judge A. W. McCarthy said he could not find a single trace of negligence on the part of Dr. Todd. All that was required of a professional man such as the plaintiff was that he should bring to his work reasonable skill and competence. The law did not require that a professional man should always be right. That would be impossible. In his diagnosis Dr. Todd was apparently correct. He was satisfied that there was cancer but he apparently expressed his opinion in rather too dramatic a manner. There was, however, nothing unprofessional in that. The learned judge concluded by stating categorically that there was not the slightest justification for saying that Dr. Todd had shown any want of ordinary skill or competence in treating the defendant, and there was no foundation whatever for the allegations made against him.

Silicosis and the Coal-Miner.

The case of Williams *v.* Guest Keen and Nettlefold, Ltd., recently decided in the Court of Appeal, reveals a curious gap in our system of workmen's compensation. Absalom Williams, a coal-miner, had for years been operating a coal-boring machine worked by compressed air. In June, 1922, his lungs became affected and he had to give up his work. In 1923 he resumed it; subsequently he broke it off again and again returned to it, and in April, 1925, he was totally incapacitated, the inhalation of dust particles over a period of years having brought on silicosis. Now a slow and cumulative disease of this kind is

not regarded by the law as "personal injury by accident" within the meaning of the Workmen's Compensation Acts. Some industrial diseases of a gradual nature (lead poisoning, for instance) have, it is true, been scheduled as legally equivalent to "personal injury by accident" in certain specified trades; but silicosis is not one of them. All that Parliament has said about silicosis is that provision may be made by the Home Office scheme for compensating workers suffering therefrom in particular industries. Such a scheme was duly made for what are called the refractories industries (i.e., mines, quarries, factories, or workshops where refractory material containing not less than 80 per cent. of silica is got or manipulated), but it does not extend to coal-mining. The result is that, though there are three different ways in which a workman can obtain compensation—for a personal injury due to accident, or for a scheduled industrial disease, or under the Home Office silicosis scheme—the coal-miner who contracts silicosis in the course of his employment cannot avail himself of any of them.

The decision of the Court of Appeal merely confirms what was already known to be the law. In 1905 (Steel *v.* Cammell Laird and Co.) a ship-caulker whose task it was to smear red and white lead upon rope yarn and to work it in with his hands, gradually accumulated lead in his system until he became partially paralysed and incapable of work. This occurred before lead poisoning had been scheduled as an industrial disease, and the law courts held that a disability which came so gradually upon its victim could not be personal injury by accident. Though there was a day when he was suddenly seized with cramp in the hands, it was not thought possible to indicate a moment at which there was an accident which caused his injury. The law thus laid down was held to preclude Williams from recovering compensation in the recent case mentioned above. That a disease may be the result of an injury caused by an accident was admitted many years ago in Brintons, Ltd. *v.* Turvey, where a woolsorter was infected with anthrax and died within a week. Lord Halsbury then said that if a tack or some poisoned substance cut a workman's skin and set up tetanus, it would obviously be an accident even though tetanus is a disease. Similarly, if some corrosive acid were spilt over the workman's hands and set up erysipelas, it would be an accident. And so the House of Lords held (Lord Robertson dissenting) that the anthrax was caused by an accident or, as Lord Macnaghten said, a chapter of accidents. More recently in 1921, in Charles Burrell and Sons *v.* Selvage, where a workman had suffered for months from cuts and scratches and the cuts became septic, the consequent total incapacity was held to be an accident within the meaning of the Acts, though no one of the series of minor accidents could be identified as the cause of the incapacity. But the silicosis of Williams was due to no such causative accident in the eyes of the law, and this unfortunate coal-miner has had no legal remedy.

The Coroners' Bill and Deaths under Anæsthetics.

At an inquest lately held upon the body of a man who died under an anæsthetic in hospital, the coroner for the City of London commented upon the omission from the Coroners' Bill of any specific provision for inquiry into such cases. Dr. F. J. Waldo stated that he had reason to believe that many such deaths occurred in private houses and nursing homes and were not reported to the coroner. The Coroners' Society, he added, had long ago come to the conclusion that no death resulting from the use of an anæsthetic, for whatever purpose administered, should be certified as a natural death, but that it should be the duty of every householder or occupier upon whose premises such a death occurred to give immediate information to the coroner or his officer. One of the first clauses in the draft consolidating and amending Bill printed and published by the Coroners' Society in 1913 was a provision for compulsory notification to the coroner of all such deaths; such a reform, said Dr. Waldo, would lead to an improvement in the collection of statistics which at present are often useless and misleading.

The Coroners' Society's draft Bill of 1913 undoubtedly contained much that was useful and well considered. If it was not wholly acceptable in official quarters, the reason may be that the clauses relating to coroners' status and emoluments were thought to be too optimistically conceived. In any case the Government Bill, withdrawn at the end of last session but likely to be passed into law this year, at present holds the field. It is true that it does not contain the particular reform which Dr. Waldo advocates, but there is so much of value in the Bill that it seems almost ungrateful to ask for more. The proposed abolition of franchise coroners, the substitution of a uniform system of annual remuneration for payment by inquest, the power to adjourn inquests pending the conclusion of a murder charge and to discontinue the inquiry if the result of the criminal proceedings justifies that course—these are reasonable reforms which were overdue. Other fresh features of importance recommend themselves—the newly-framed power to summon medical experts (though it is not quite clear what will happen if several coroners desire the attendance of our chief experts on the same day), the machinery for holding a single inquest where several deaths, due to one and the same accident, occur in the jurisdiction of different coroners, the power to hold an inquest though the body is destroyed or irrecoverable, the cautious provision for taking a majority verdict from the jury, and the removal of the absolute obligation that the jury should view the body, a duty which is seldom necessary save where there are wounds which raise the question whether the injury is self-inflicted or not. While we should be sorry to see the success of so useful a Bill jeopardised by too much criticism, Dr. Waldo is right, of course, to insist upon the importance of obtaining all possible information as to the effect of the different anæsthetics. Useful statistical results might follow the properly coördinated administration of that clause in the Bill which empowers post-mortem examination where there is sudden death from a cause unknown and where the coroner thinks a port-mortem might prove an inquest unnecessary. But this clause does not meet the case of deaths under anæsthetics. A proposal which might have the effect which Dr. Waldo desires has been discussed from time to time, but is understood to lack the support of the Coroners' Society. It is that the coroners should nominate a panel of acknowledged experts in physiology whose services would be available for investigating all cases of deaths under anæsthetics in hospitals, provision being made that no expert should be asked to investigate a death at his own hospital. Such a plan would provide the statistical data which we require. Certainly it would in most cases render an inquest unnecessary.

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THE LANCET.

LONDON: SATURDAY, JANUARY 9, 1926.

THE EFFECTS OF CORONARY OCCLUSION.

IN these days, when the chief advances in medicine come from the laboratory or from the application of experimental methods, it is of some interest to record a noteworthy advance in clinical descriptive medicine. We are so prone to regard the fields of clinical observation and of pathological anatomy as fully charted, that it comes almost as a surprise to find that we have had before us a more or less clear-cut syndrome due to a definite acute pathological accident, which is not generally recognised clinically and which is actually not accurately described in the majority of current text-books. That angina pectoris can be associated with disease of the coronary arteries has been known since the observations of EDWARD JENNER, who found this condition at the autopsy of his friend, JOHN HUNTER. That sudden obstruction of the coronary arteries, or of one of their principal branches, is a frequent cause of sudden death is a commonplace of the coroners' courts. It is also well known that obstruction, either sudden or gradual, of a branch of the coronary artery can produce pathological changes in the cardiac wall varying from ischæmic necrosis to fibroid substitution according to the stage. It is less common knowledge that such obstruction can produce a series of symptoms which enable it to be recognised with some degree of certainty.

In the October number of the *Quarterly Journal of Medicine* there is a paper by Dr. J. W. MCNEE giving a clear account of the clinical syndrome of coronary thrombosis, based on three cases seen at the Johns Hopkins Hospital, Baltimore. This paper deserves careful study. Dr. MCNEE points out that the condition has received special recognition in the United States of America, and refers to a considerable literature concerning it. He maintains that the main clinical features are agonising pain lasting longer than the pain of similar character occurring in angina pectoris. It is probable that the condition hitherto described as "status anginosus" is of this character and owns this causation. The distribution of the pain is often anomalous, and may give rise to the suspicion of perforated gastric or duodenal ulcer, cholelithiasis, or acute pancreatitis. A peculiar colour and appearance of the face is described—namely, an earthy colour with definite though slight cyanosis. As might be anticipated, coronary thrombosis is immediately followed by signs of acute heart failure, with the indications of cardiac embarrassment and the signs of pulmonary, hepatic and renal engorgement. A localised pericardial friction in association with these clinical manifestations is pathognomonic, but is not constant and may be extremely evanescent. Fever and some degree of leucocytosis are always present, and some abnormalities in the electrocardiographic records are common, but not characteristic.

Two important papers have appeared in recent issues of THE LANCET dealing with the same subject, supplementing in a useful and noteworthy fashion the observations recorded by Dr. MCNEE. It is of some interest to note in this connexion that one of the earliest if not the first observations on this subject, from the pathological point of view, was published in our columns as long ago as 1887 by Dr. J. L. STEVEN, of Glasgow. In the first of the two recent papers Dr. A. G. GIBSON, of Oxford, critically examines the symptoms recorded in some 43 cases, including some observed by himself; he also includes brief descriptions of cases under the care of Dr. JOHN COWAN, Prof. F. R. FRASER, and Dr. K. D. WILKINSON. Dr. GIBSON'S observations in the main confirm those of Dr. MCNEE and the American observers, but he also includes the more severe cases in which sudden death or rapid cardiac failure occurs. In addition to the localised pericarditis, which so frequently occurs, he points out that clot often forms on the endocardial side of the ischæmic or necrotic area, leading not infrequently to embolic phenomena. He goes so far as to state that in old people chronic cardiac failure complicated by aseptic embolism makes the diagnosis of ischæmic necrosis practically certain. Another result to which he refers is weakening of the heart wall to such an extent that rupture occurs. Dr. GIBSON refers to the pulse in ischæmic necrosis. He mentions that Sir JAMES MACKENZIE noticed pulsus alternans in two of his cases. Auricular fibrillation has also been observed. He suggests that a recent paper by COWAN and BRAMWELL [1] seems to indicate that bundle branch block may frequently be present in these lesions. The other paper, published in our issue of Jan. 2nd by Dr. CAREY F. COOMBS and Dr. GEOFFREY HADFIELD, is noteworthy, not only for the admirable coloured plate with which it is illustrated, but also for the useful classification of the clinical types observed as a result of coronary occlusion. They group these under three heads, viz.: First, cases with acute ventricular failure, corresponding closely to the syndrome described by Dr. MCNEE and the American physicians; second, those with chronic cardiac failure; and third, cases with unrecognised symptoms dying before diagnosis is established. Dr. GIBSON, in his useful comments on the cases studied by him, suggests that there still remains an enormous field for study in these cases, particularly in regard to the correlation of symptoms with special anatomical lesions. He states that attempts to deduce the site of the lesion from the symptoms have proved unreliable, and further, that there appears to be no relation between the size of the lesion and the severity of the symptoms, a somewhat surprising statement.

It is to be hoped that the clear accounts given by these various observers will serve to direct more general attention to this interesting and important condition. Dr. G. KLIONSKY'S note on p. 74 is an earnest of what may be expected.

THE BRITISH PHARMACOPŒIA.

A PROFESSOR and learned physician who was placed on a committee to make suggestions for the revision of the British Pharmacopœia, gave good help in this task, for he had a great experience in the action of drugs, but he confessed that he had never seen a copy of the work. That is a story which bears exact relation to one of the difficulties which the General Medical Council at the present time is experiencing. The Pharmacopœia has the first sort of official backing, but it is not generally consulted by the practitioner, and many medicines that are in common use obtain no mention in its pages. Why had the professor not seen the book? The Medical Act of 1858 enacts that the General Medical Council shall cause to be published a book containing "a list of medicines and compounds, and the manner of preparing them, together

[1] Quarterly Journal of Medicine, October, 1925, p. 95.

with the true weights and measures, by which they are to be prepared and mixed." The term "a list of medicines" is vague enough, and leaves much to the discretion of the Council. It is generally accepted that only well-tried drugs and those whose exact composition can be defined shall be made official, and as each new Pharmacopœia comes round there is much talk as to which of the recent inventions shall be admitted, and which of the redundant ones shall be dropped. Additions and excisions have been carefully and skilfully accomplished, while, as far as the former are concerned, there are always many drugs of common use which, perhaps because they are not sufficiently tried, perhaps because more efficient ones have been invented, perhaps because their method of preparation is not exact enough, can find no place in the official list. Any list, however carefully compiled, would be open to criticism, and the British Pharmacopœia may be too exclusive, but this is a fault in the right direction.

Now, if to give, over a sufficiently wide range of material, the names of drugs and their doses were the sole object of the Pharmacopœia, it is probable that the official volume would be well known to doctors. The words, "manner of preparing" drugs and their compounds, however, introduce a different issue. The practitioner of 100 years ago prepared many of his own drugs himself, but his successor of to-day would be at a loss to prepare the simplest of his remedies, and instruction upon the matter is largely wasted upon him. His acquirement of pathological knowledge and of the experience which will give him skill in diagnosis, leaves no space in his curriculum to work at an art which can well be carried out by those whose curriculum is more specialised and not so long; in a shorter time they can make themselves more perfect than he can hope to do. It is ordained, and rightly we think, that this information as to how to prepare medicines and compounds should be published in the Pharmacopœia, for a public standard has to be maintained; but its inclusion makes the volume, though ultimately for the practitioner's use, something of an embarrassment to him. And when the information in the Pharmacopœia goes to fine extremes in securing the exact preparation and complete purity of the drugs with which it deals, much labour and wisdom are wasted if, by chance, certain of these drugs are not in common requirement. Because, therefore, the Pharmacopœia includes unnecessary matter as far as modern therapeutics are concerned, and because it is slow to adopt new remedies other works are found more acceptable by the profession, but even so the practitioner does use the British Pharmacopœia, even though individually he has never seen it, for these other works, whether by physician or pharmacist, are all based on it. The books omit much of the information as to the preparation of drugs with which it is lumbered, and add to it in other ways, one by showing the application of drugs, others by describing medicines which have not yet obtained their foothold in the national book or which are still only in their "proprietary" stage. It has been argued against the General Medical Council that its book is heavy and lifeless. We hope we have shown that this heaviness—in so far as it betokens accuracy—is a virtue rather than a vice.

Other troubles have arisen in the preparation of the new Pharmacopœia. It has been customary for the General Medical Council, at the time of the preparation of each edition, to invite the help of others to join in the preparation. Naturally, the most important invitation goes to the Council of the Pharmaceutical Society. Formerly the aid thus asked has been given. Now the Pharmaceutical Society, which certainly is able to supply a larger share of the knowledge required to make a Pharmacopœia than any medical body can do, objects to a mere invitation and claims its right to representation. The suggestion made by the General Medical Council to the Pharmaceutical Society was to set up, in the first place, a Pharmaceutical Advisory Committee, consisting of three members from each body with the President of the General Medical Council as chairman; and, in the second place, a Committee of Reference in Pharmacy, to be nominated wholly by the Pharmaceutical Society, to consist of expert pharmacists and to deal with questions bearing on pharmacopœial pharmacy. Both these committees were to be advisory, the General Medical Council reserving its freedom to adopt or disregard the advice and suggestions offered. The Pharmaceutical Society rejected this proposal, insisting on actual representation on the Pharmacopœia Committee as essential. In a letter to the Privy Council the Society expresses dissatisfaction at the present conditions of production, finding the intervals between successive editions of the Pharmacopœia too long, each edition being in some respects out of date when published, and the work of preparation inadequate. The Society reminds the Privy Council that one of the two editors of the 1914 edition was Prof. H. G. GREENISH, dean of the Society's School, and the Privy Council is asked to give the Society, as in the case of the national pharmacopœias of other countries, some effective voice in deciding upon the methods and extent of pharmaceutical research to be undertaken in preparing the Pharmacopœia, and upon the extent to which the purely pharmaceutical matters in the Pharmacopœia require modification. It is the view of the Pharmaceutical Society that no legal obstacle exists to prevent the granting of such representation, and the Society requests the Privy Council to inquire what alteration of the law, if any, is needed in order to secure the preparation of future editions of the Pharmacopœia upon a satisfactory basis. The claim of the Pharmaceutical Society seems to us fair enough on general principles, for, as we have stated, bulk for bulk, a bigger share of the Pharmacopœia is pharmaceutical than medical. It must, however, be remembered that the General Medical Council works under the Act of 1858, and it appears to us that, if a change is to be made, it will depend on a change of constitution of the Council rather than on any internal action of the Council itself. It would seem wiser, if a change is to be made, to take steps as soon as a new pharmacopœia has been issued, rather than while one is in active preparation. The "Locarno" spirit will, at the present time, suit best these two branches of the art of healing which have of recent years been working so well together.

LABOUR PAINS.

PHYSIOLOGISTS have much reason to be proud of their work during the last half century. Questions which never occurred to their forefathers have been faced and answered. On the other hand, some of the most familiar phenomena in human physiology are as perplexing now as they were at the dawn of medical science. One of the most striking of these is the process of labour. A child is born every minute, but no one has yet explained why the fœtus is expelled automatically at full term or the exact part played by the unstriped muscle of the uterus in the process. The pains of labour are proverbial, but no one has yet given a reason why this normal physiological process

should be such a painful experience, why some pains are strong and others weak, and why the process of expulsion in a normal pelvis sometimes encounters overwhelming resistance and sometimes none at all. "Lieferung XX." of the new German text-book on gynæcology[1] contains 200 pages on the expulsive forces alone, contributed by Prof. HANS GUGGISBERG, of Berne, who expatiates on the experimental investigation of uterine activity, the results of artificial stimulation, the clinical aspect of pains, the various theories of the exciting agency of labour, weak and strong pains and their therapeutic control, and his treatise may be confidently referred to as an exhaustive and up-to-date study of the subject. But the student who hopes to extend his knowledge of the essential physiology of birth will find in it little to satisfy him, for whenever the scent freshens he comes up against a baffling wall in the author's conclusion that "in the present state of our knowledge we are unable to answer this question."

In discussing the reason for the painfulness of labour, Prof. GUGGISBERG compares the process to peristalsis, which becomes painful if it is resisted, and points out that the uterine muscle meets with more resistance in the performance of its function than any other muscle of the body. The pain varies largely with the state of the soft parts, and elderly primiparæ are on this account liable to severe labour, while patients with placenta prævia, whose soft parts are slack, may undergo several hours of labour before they feel pain. Other causes of pain are the pressure to which the pelvic organs are subjected and the stretching of the peritoneum incident to the uterine contractions. He contrasts human labour with that of animals, noting that in the former the cervix and vagina are passive, while in the latter the vagina plays an expulsive rôle. The chief function of the human vagina seems to be to expel the placenta. Animal experiments have thrown little light on the part played by the various nervous connexions; the uterus appears to have its own controlling ganglia and will function perfectly well even if its connexions with the cerebral, spinal, and sympathetic systems have been severed. The experiments give widely differing results not only in different animals of a species, but also in the same animal at different stages in the reproductive process. There seems no doubt that the contractions can be affected through the motor centres of the central nervous system, and anæmia of the brain can act as a stimulant, but this aspect has been very little investigated and has at present no therapeutic significance. Reflex stimulation—that, for instance, of a loaded alimentary tract or bladder—is well known to inhibit "pains," which can be also excited from the skin. GOTTLIEB showed that irritation of the intestine led to heightened blood pressure in the pelvis and reflex excitation of the uterus.

It is this autonomy of the uterus that has limited obstetric drugs to those which act directly on the uterine musculature, such as pituitary extract and quinine, but stimulation via the sympathetic and autonomic nerves may be of value under certain circumstances. SCHÄFFER and KURDINOWSKI have demonstrated the rapid and efficacious action of adrenalin on the contractions, and the former has recommended its use therapeutically in conditions of hæmorrhage. Prof. GUGGISBERG thinks that it is indicated in atony with post-partum hæmorrhage and in Cæsarean section, in doses of 0·1 to 0·3 mg. directly injected into the body of the uterus. NEU observed a tonic contraction of the os after its administration, and for this reason and on account of the idiosyncrasy of some women to the drug it must be used with considerable caution. Prof. GUGGISBERG lays stress on the value of reassurance in primary inertia and urges the practitioner to be content to do nothing save comfort his patient. Vaginal examinations he strongly deprecates. His views on the use of pituitary extract, ergot, and quinine correspond with those commonly held in this country. Quinine is mild and hardly ever causes cramp or other bad results, but its uncertainty restricts its use to the second stage, when pains are weak, and to abortions. Ergot he thinks chiefly valuable during the period immediately following expulsion, especially when the muscular tone is bad, and prefers it to pituitary extract because it is milder. Combined with this extract it reduces bleeding in Cæsarean section to a minimum. Pituitary extract has the advantage of being a natural substance produced by the body itself and not a foreign introduction, and on the whole he does not regard it as dangerous.

All this, however, has been said before, and the fact that a text-book of this magnitude has to confess ignorance on almost every page should act as a strong spur to investigators. Obstetricians are tending more and more nowadays to "leave everything to Nature," and if this clinical attitude is to be justified it would be as well to know a little more clearly the processes by which Nature works.

[1] Biologie und Pathologie des Weibes. Ein Handbuch der Frauenheilkunde und Geburtshilfe. Josef Halban and Ludwig Seitz. Urban and Schwarzenberg. Berlin and Vienna. 1925. Pp. 1059. Die Wehen.

Annotations.

"Ne quid nimis."

THE NEW YEAR HONOURS.

THE list of New Year Honours, though short, contains a number of names representing various branches of the medical profession. Sir Robert Jones, who has become a baronet, is identified with recent progress in orthopædic surgery. Surgeon Vice-Admiral Joseph Chambers, who has been promoted to K.C.B., is the head of the Medical Department of the Navy. Dr. Robert Bolam, one of the new knights, is Chairman of Council of the British Medical Association. Lieut.-Colonel Frank Powell Connor, D.S.O., I.M.S., professor of surgery and surgeon to the Bengal College of Medicine, Calcutta, and Dr. Henry Alfred Alford Nicholls, lately P.M.O. to Dominica, Leeward Islands, have also received the honour of knighthood, while the C.I.E. has been conferred upon Lieut.-Colonel John Wallace Dick Megaw, I.M.S., Director of the School of Tropical Medicine and Hygiene, Calcutta, and upon Major Robert Henry Bott, I.M.S. Dr. Frederic Jeune Willans, Surgeon Apothecary to H.M. Household at Sandringham and to the late Queen Alexandra, has been promoted to C.V.O. Dr. Jessie Carleton, of the American Presbyterian Mission, Ambala; Dr. Jessie Matilda Allyn, of the Canadian Baptist Telugu Mission, Pithapuram, Madras; and Dr. Charlotte Leighton Houlton, medical officer in charge of the Lady Reading Hospital for Women and Children at Simla, have received the Kaisar-i-Hind medal of the first class for public services in India. To all these recipients of well-merited honours we tender hearty congratulation in the name of the medical profession.

REFORM OF THE POOR-LAW.

SINCE an Act of Queen Elizabeth directed that three or four substantial householders should act as overseers of the poor in every parish, the ultimate responsibility for the relief of the destitute has gradually passed, by way of Poor-law Commissioners and the Local Government Board, to rest at last in the Ministry of Health. Yet the local guardians elected to deal with their own parishes have survived the changes of 325 years. They have carried out their duties with more or less success, and it is only the growth of other machinery of local government, whose sphere of influence and work often overlaps that of the guardians, which has convinced most political leaders that the guardians themselves are obsolete. It is to be hoped that a measure of Poor-law reform

will never be the subject of party bickering, and it is well that the Minister of Health should allow plenty of time for consideration of his new proposals by those concerned before pressing a Bill upon Parliament. These proposals will probably meet with the approval of theorists (who are often right), but they have already raised something of a storm in the parishes. The Minister's circular sums up his proposals in the following words :—

1. The coördination and improvement of the provision made for the prevention and treatment of ill-health, both institutionally and otherwise, and the inclusion in this provision of all public assistance required as the result of sickness, accident, and infirmity.
2. The coördination of all forms of public assistance, and especially an improved correlation between Poor-law relief and unemployment benefit.
3. The decentralisation of the responsibility at present falling on the Minister.
4. The simplification of the financial relations between the Ministry and the local authorities and the freeing of the local authorities from the financial restrictions in matters of comparative detail which are a necessary concomitant of the present system.
5. The correction of certain anomalies of historic origin, such as the association of the registration service (births, deaths, and marriages), with the provision for the relief of the poor.

The two main suggestions are that boards of guardians should be entirely abolished and that their functions should be transferred to the county councils and county borough councils. The county councils are to be the administrative units and are to be freed from central government control, as far as their health services are concerned, by receiving block grants of money which will supply their needs over a period of years and will enable them to deal with their own problems without frequent application to the Ministry for sanction of details. County councils will be entitled to delegate their new duties to borough and district councils, who will be expected to bear the cost of their own work but may receive additional grants from the counties. The assigned revenue system will be abolished, but local taxation licence duties at present levied by county councils and county borough councils will still be levied by them.

Critics of the proposals feel strongly that the county councils, whilst giving uniformity to the administration of relief in their areas, will lack the local and personal knowledge which boards of guardians have possessed. The councils, it is suggested, have already a vast amount of work to do, and the Minister's proposal that their membership should be enlarged to include ex-guardians who have special knowledge does not altogether meet the objection that the service of poor relief will lose a good deal of that voluntary work which is so valuable. It is feared that it will tend, unless checked, to fall largely into the hands of paid officials. The paid official is a necessary part of any scheme, but English tradition always—and rightly—prefers him as the servant of an elected and executive body which takes a continuous and unremitting interest in his work. It is the failure of a few elected bodies to do their work properly and with responsibility that has finally forced reform upon us after many years of vague discussion. The extension of the municipal franchise has placed power in the hands of the wage-earner rather than in those of the ratepayer, and it is intolerable, as the Minister implies, that the election of guardians should depend on how much they will offer to pay to the unemployed. The Minister evidently believes that by making poor relief a part of the functions of a larger body—the county council—he can abolish this abuse. His critics fear that the abuse will be transferred to the councils themselves, and that popular clamour for relief will rule these elections also.

Mr. Neville Chamberlain's plans for the future of the hospitals can conveniently be discussed at another time, but it may be mentioned that his memorandum suggests that the reforms ought to make the amenities of Poor-law medical institutions available and acceptable to all classes of the population. In many of them the facilities for treatment are excellent, and it is very desirable that they should no longer remain out of the reach of many sections of the community who either cannot or will not bring themselves within the scope of the Poor-law.

PUBLIC TREATMENT OF TUBERCULOSIS.

WITH the New Year there came into operation an instruction of the Ministry of Health (Mem. 37/T) to all local authorities responsible for the treatment of cases of tuberculosis, by which it prescribes uniformity of records and statistical returns. As the Ministry pays half the expenditure of local authorities in treating cases of tuberculosis, it has some right to call the tune and to see that the public gets full value for the money it spends. The Ministry desires to know what progress tuberculosis schemes are making, what is the volume and character of the work being done, and what are the immediate and ultimate results of treatment under each scheme. With this end in view it requires the keeping of uniform records and the presentation annually of certain uniform statistical information. Such administrative control is no doubt inevitable, but the duty of furnishing the information which the Ministry requires, although the latter is stated to be reduced to a minimum, undoubtedly entails a considerable amount of extra clerical work for those in charge of tuberculosis dispensaries. The demand for uniformity in work may be expected to produce here, as it does in similar cases, some raising of the standard of work in the less efficient dispensaries and institutions, but it may at the same time hamper and discourage those who set up high standards of performance.

The memorandum has been incubating at the Ministry for several years and has been the subject of consultation between the Ministry's officers and tuberculosis workers of all branches. Though regarded by the latter as a disagreeable necessity, it has been moulded to reconcile as far as possible many divergent points of view. The basis of the uniformity aimed at is the new system of classifying patients suffering from tuberculosis which the Ministry imposes. This system, though stated to be purely tentative, pending agreement among clinicians on a better system, cuts right across all existing systems of classification, and renders statistical comparisons with previous years and other countries almost impossible. It is, therefore, all the more to be regretted that a new system should be put forward which itself shows defects so far as it applies to cases of pulmonary tuberculosis. In several respects it marks a considerable advance, notably in putting in two different classes cases in whose sputum tubercle bacilli have at some time or other been demonstrated and those in whose sputum they have never been found. Thus are separated the cases where there can be no doubt of the accuracy of the diagnosis from those in which there must always remain some doubt. The Ministry has done well also in laying emphasis on the degree of constitutional disturbance present, since this has more value in assessing a patient's prospect of recovery than the mere extent of lung involved. The "T.B. plus" cases are sorted into three groups, the first of which must have physical signs and symptoms of such limited degree that probably no more than 10 or 15 per cent. of the cases ordinarily treated in a sanatorium would satisfy the criteria. At the other end of the scale is Group 3, equally limited in numbers and defined as follows :—

"Cases with profound systemic disturbance or constitutional deterioration; with marked impairment of function, either local or general, and with little or no prospect of recovery. All cases with grave complications, whether tuberculous or not, should be classified in this group—e.g., diabetes, tuberculosis of larynx or intestine, &c."

These criteria seem to be not alternative but cumulative, and it is unlikely that a definition, to which in practice widely varying interpretations will be given, and which is so illogical as to make the

classification depend on the prognosis instead of the opposite way about, can stand the test of time. The great mass of intermediate cases, probably 70 per cent. of the whole clientele of the average dispensary, is left to form Group 2 without any means of further subdivision. More successful are the definitions stating the results of treatment—namely, "cured," "arrested," "quiescent," "improved," and "no material improvement." The model case records set out for completion by tuberculosis officers, sanatorium physicians, and panel doctors treating insured cases of tuberculosis appear to meet all requirements. A new feature, copied from the Ministry of Pensions, is that the accumulating records shall form a transferable dossier to be put at the disposal of the sanatorium or hospital when the patient is admitted there, or transferred to another dispensary when the patient moves from one area to another.

The Ministry makes it clear that the general practitioner is expected to provide the ordinary treatment of tuberculous patients where these are insured or can afford to pay for medical attendance. The functions of the tuberculosis dispensary are limited to diagnosis, consultation, and general supervision, with treatment for such patients as require special knowledge or technical skill or cannot obtain other adequate medical attendance. Every patient is regarded as being continuously under the "general supervision" of the tuberculosis officer, and should be examined by him at least once a year. The procedure in regard to contact cases is laid down, and pressure is brought on the tuberculosis officer to make a definite diagnosis in observation cases within two months after the first examination. While some such provision may appear necessary where the tuberculosis officer is easy-going or reluctant to make up his mind, it is conceivable that the rigid observance of this rule may lead in certain cases to ill-considered diagnoses.

THE HEALTH OF MERCHANT SEAMEN.

NORWAY, with her long coastline, is one of the foremost seafaring nations, so it is not surprising to learn that the Norwegian Red Cross has taken up the question of the health of merchant seamen. The Red Cross, with its peacetime health programme, is an international body peculiarly well fitted to undertake this task, and it may be recalled that the Norwegian Red Cross, at the Third General Council of the League of Red Cross Societies held in Paris in 1924, appealed to other national societies in this matter. The assembled delegates of the 54 National Red Cross Societies thereupon passed the following resolution:—

> The General Council, having taken note of the interesting pioneer work undertaken, in coöperation with Governmental departments, by the Norwegian Red Cross for the improvement of health in the Merchant Service, and believing that this constitutes a new and promising field of Red Cross activity, recommends the National Red Cross Societies of all maritime countries to take part in this activity as far as possible, through the following channels: (*a*) Educational propaganda on board ships, by posters, pamphlets, and other means. (*b*) Improvement of existing manuals on hygiene for seamen, or publication of new ones. (*c*) Establishment of Red Cross health centres with clinics for the medical treatment of seamen. (*d*) Drawing up of plans for the supply of up-to-date medicine chests. (*e*) Request to the Norwegian Red Cross, through the intermediary of the Secretariat of the League, to collect the results of efforts undertaken in accordance with (*b*) and (*d*), and to draw up a plan for an international type of medicine chest and manual, based on these results.
>
> The General Council desires to express its conviction that the International Conventions at present under discussion for the prevention of venereal diseases should be extended to include a wider health programme for seamen of the Merchant Service and requests the Norwegian Red Cross jointly with the Secretariat of the League to forward a communication to this effect to the Joint Maritime Commission of the International Labour Office.

In an article published in the January number of the *World's Health*, Dr. Harold Engelsen, of Norway, describes the steps which have been taken by the Norwegian Red Cross since the passing of this resolution, and appeals to other nations to assist in the effort to improve the health of merchant seamen. In Norway 21 medical stations have been established by the Red Cross in the principal seaport towns, and doctors have been appointed, whose duty it is to look after all sailors, of whatever nationality, who apply for treatment. Usually these doctors are also medical officers of health, and they carry on this work by special arrangement, in addition to their other duties. A moderate charge is made which the sailor himself is asked to pay, as it has been found that he is willing and able to pay, but often does not know where to apply for help. Dr. Engelsen suggests that it should be stated in the sailor's certificate when he was last vaccinated against small-pox and inoculated against typhoid, paratyphoid A and B, cholera, and plague. He also suggests that the Red Cross doctor should record in a note-book the patient's name, nationality, disease, treatment and date of treatment, and that this book should be handed to the sailor, with instructions to present it next time he requires treatment in a foreign port. The Red Cross on the cover would act as a passport to any Red Cross medical station, and the fact that he had a written record might encourage the sailor to apply for treatment in a foreign port, as it would lessen the difficulty of explaining his case.

The Norwegian Red Cross, while fully recognising the importance of the step which has been taken by the adoption of an international agreement for the establishment of venereal disease clinics for seamen, is of the opinion that the question of the health of merchant seamen should be dealt with in its entirety, not limited to any one disease. Special clinics for the treatment of venereal disease only, it is felt, may deter sailors from applying for treatment owing to a feeling of shame, whereas if medical stations were established in ports throughout the world where all diseases were treated, these clinics would soon become known and valued by seafaring folk. Soldiers and sailors have always had a first call upon the services of the Red Cross and it is not likely that this appeal will be made in vain. Already other national societies are showing their interest. The Greek Red Cross has appointed a committee to consider the question, and this committee has recommended the establishment of medical stations in the principal ports of Greece. The Central Committee of the Norwegian Red Cross Society is considering the possibility of organising this summer a tour of inspection of certain ports in Norway in order that representatives of National Red Cross Societies interested in this matter may study on the spot the working of the Red Cross stations for seamen.

A GREAT WAR HOSPITAL.

IT has been decided that Bellahouston Red Cross Hospital shall be demolished save a small portion temporarily retained for the Pensions Ministry. During three years of war and in the year following there were received into the hospital 14,807 sick and wounded soldiers drawn from every section of the Imperial forces. The success of the undertaking offers lessons in construction, organisation, and finance. In 1915 a large hospital had to be put up at a time when labour and materials were scarce. It had to be quickly finished and easily expansible. Asbestos sheeting was selected as material and the one-storey bungalow system, with its saving of lifts and stairs, was adopted. The whole was built upon the central corridor plan, the corridor running north and south with blocks opening off it on each side. Between the blocks, each of which held 50 beds and was complete in itself, there was enough space to allow patients to be wheeled out into the air and sunshine. The hospital came into use with 500 beds, but later its size was increased to hold 1200. A special department for orthopædics, curative baths, physical therapy, and orthopædic workshops was added, as well as the necessary annexes for the staff; and the fact that all this was done at an outlay of

£100,000, including equipment, showed that the Scottish Red Cross had been wise in adopting a simpler method of hospital construction than that usually in vogue. The hospital was regarded officially as one of the best arranged and equipped hospitals in the kingdom. In an article contributed to the *Glasgow Herald* Sir George Beatson draws the attention of those interested in the problems of civil hospitals to the experience gained at Bellahouston. The civilian voluntary hospitals, he says, have defects in their construction, their organisation, and their finance, though their management is excellent. The usual type of hospital building is costly to erect, expensive to run, and gives meagre accommodation for the money spent on it. There is also an absence of coördination between the different hospitals. What is needed, he says, is the regional distribution, around central hospitals, of auxiliary hospital groups, and clearing-houses for the disposal of the patients. The present system of hospital finance is out of date and must be adapted—without imperilling the voluntary principle—to present-day requirements. In these things, he suggests, the history of the Bellahouston Hospital would well repay study.

THE APPRAISAL OF PUBLIC HEALTH WORK.[1]

THE handsome volume issued by the American Child Health Association embodies an important contribution to public health literature, for it gives the details, with abundant examples, of a method of measuring public health activities which enables the relative position of any sanitary area to be contrasted by means of a single numerical marking with that of other areas. It is significant of a sound view of the intimate relation between child health organisation and public health organisation as a whole that the health survey of 86 cities embodied in this volume is made by a staff of five hygienists on behalf of the American Child Health Association. The outstanding results of the survey show that while in each city some organised effort was being carried on for bettering the health of children, the amount on an average was not more than half what might be expected in a reasonable health programme. The cities whose experience is thus summarised had a population at the last American census ranging from 40,000 to 70,000. They were scattered over 31 States, and may be regarded as representing all sections of the country.

Some of the results of the survey may be briefly stated. In less than half of these cities was a whole-time officer employed, in 22 of the cities the health officer was non-medical, and in only two had he a public health degree. The salary for whole-time health officers averaged £700. We learn that the utilisation of the vital records of births and deaths in revealing the state and trend of health is not common practice, though some cities obtained full marks while others obtained none under this heading. The average marking for the 86 cities was highest in elementary sanitation, next highest in laboratory work and in infant hygiene; vital statistics, venereal disease, tuberculosis, school hygiene, communicable diseases, prenatal hygiene, pre-school hygiene, and popular health instruction following in descending order of excellence, the average marking for the last-named item being only 21 per cent. of the marking for a full programme. The chief interest of the report lies, however, in its suggestions of possibilities of quantitative assessment of the relative position of various communities in respect of public health administration; and especially in the proposal to summarise the relative position of each community by means of a final comparative figure. The history of progressive effort to arrive at this result is an excellent example of organised team-work, in which the American Child Health Association has coöperated with the American Public Health Association, the final scale of marking adopted in the present volume having been fixed at a conference of representative health officers.

The appraisal form adopted in this investigation is as follows:—

Vital statistics			60
Communicable disease control			175
Venereal disease control			50
Tuberculosis control			100
Health of the child—			
Prenatal	75		
Infant	75		
Pre-school	50		350
School	150		
Sanitation—			
Sanitary inspection	20		
Food and milk control	75		
Water	40		175
Sewerage	40		
Laboratory			70
Popular health instruction			20
			1000

Doubtless this marking will be modified in the light of experience, and appreciation of its value must necessarily depend on the details under each heading, which cannot be given here owing to considerations of space. It will be noted that the appraisal is not based on money expended or on personnel employed, as this may represent resources more than performance. Nor is it based on mortality or sickness rates; for it is conceivable that a high rate in one area may be associated with better public health work than a low rate in, let us say, a dormitory outflow from an industrial town. In the form typical activities susceptible of definite and quantitative measurement are selected—e.g., number of children at instructive clinics, physical defects of school-children detected and treated, number of cases of tuberculosis hospitalised, laboratory tests made, and so on. These and similar activities receive a weighting, as partially indicated in the above table; and doubtless opinions may differ as to the relative markings adopted. The importance of an unbalanced marking evidently can be minimised by stating the results for each city in detail; and a chief gain from such an investigation would be the possibilities of aggregate and of detailed comparison with other communities. For tactical reasons individual markings are not given in this volume; but in communicating local results to the health officer of each city he is informed of the details of the local marking. The total aggregate marking evidently has a high value, just as has the expectation of life given by a carefully constructed life table; but alone it can give only the *vue toute ensemble;* and it needs to be supplemented by a statement of marking for individual items, just as in a life table it is necessary to know also the probabilities of life and death at each year of age or at each quinquennial period of life, if a complete picture of the vital statistics summarised in the life table is to be obtained, and if special attention is to be concentrated on effort to diminish excessive mortality at any one period of life.

The appraisal form can be made the means for valuable educational work. It can be used to secure additional expenditure on needed public health work, as a pointer showing in what directions improved administration is called for, as a summation of an annual survey of work, and as a means of arousing and maintaining public interest in the work of the health department. It is fully realised that such an appraisal form can have only a partially scientific basis, as judgment of the relative value of various health activities must vary with local circumstances and with increasing knowledge. But, although this is so, we welcome this volume as embodying an important contribution to public health literature, and as pointing the way to a rational method of comparing public health work in different communities, and, above all, of stimulating to better and more extensive work wherever this is required.

[1] A Health Survey of 86 Cities by the Research Division of the American Child Health Association. Published by the Association at 370 Seventh Avenue, New York. With 43 charts. Pp. 614. $3.

GLYCOSURIA AND LIFE ASSURANCE.

RECENT letters in our columns [1] have raised the question of the correct attitude of the life insurance office to clients whose urine contains a copper-reducing substance. Formerly it was thought that such a substance must be dextrose and therefore that the patient had diabetes mellitus. The recognition that the urine may contain other copper-reducing substances has led to more careful investigation. Even if the copper-reducing substance be dextrose, this is not sufficient to prove that the patient has diabetes mellitus, and insurance offices who do no more than this test are not dealing quite fairly by their clients. It is now recognised that the blood-sugar is not constant throughout the day, but may rise as high as 0·18 per cent. after a carbohydrate meal. The blood-sugar in healthy persons has usually returned to normal after one to two hours, and unless the blood-sugar rises above the level of the threshold of the kidney for sugar, none can be detected in the urine by ordinary tests. The threshold of the kidney is set at 0·16 or 0·19 per cent. in the great majority of persons, but it may be either higher or lower than this level. If it be lower, sugar may be present either after each meal or throughout the day, depending on the level of the threshold. Patients who have a normal sugar tolerance, but have a lowered kidney threshold for sugar are said to have a renal glycosuria. In the past these patients have been diagnosed as having diabetes mellitus, but this mistake should no longer be made. Admittedly the condition has not long been recognised, but there are some patients whose blood-sugar curves have been under observation for over ten years, and whose condition has not undergone any change. There does not seem any reason why such persons should not be accepted at ordinary risks by the insurance offices. Some offices, it appears, are already doing this, but others either refer the patient to his medical attendant or defer the examination for a short period. In the light of our present knowledge this attitude does not seem correct. It would be an advantage to such a client if he (or his medical attendant) were told that he could not be accepted until his sugar tolerance had been proved normal by careful tests. If the blood-sugar curve was absolutely normal, the patient could well be accepted at ordinary rates. If it was not quite normal the patient should be deferred for a period of three months and then re-examined. Such a procedure entails a good deal of work, but the results should go far to remove any grounds for criticism of insurance offices.

THE VALUE OF CARDIAC AUSCULTATION.

IN the mind of the public the doctor is as inevitably associated with the stethoscope as is the cobbler with his last or the mason with his trowel. And the necessity of this conjunction is apparently felt almost as widely in the ranks of the profession itself, for we recently met an obstetrician who held that it was as futile for a physician to be without a stethoscope as for an accoucheur to be without forceps. To all those believing in this necessity the words of Dr. Otto May, in his address to the Assurance Medical Society printed in another column, will come as rank heresy. "I say," he writes, "in all seriousness, that it was a bad day for life assurance when the stethoscope was first applied to the heart; that it has done more to confuse the issues between proposer and company than most of us can realise. Conceive, if you can, the enormous number of perfectly good lives rejected, and, what is worse, made unhappy and invalided, by the discovery of a perfectly harmless 'murmur'! Conceive, on the other hand, the number of thoroughly bad lives accepted as a result of the examiner's . . . acceptance of the stethoscope as the practical arbiter of the heart's condition —'no murmur, therefore a good heart.' I repeat that, on balance, the harm done, not only to life assurance, but to medicine generally, by the auscultation of the heart, immeasurably outweighs the good." These are very strong words, but whether we agree with the writer's conclusions or not there can be little dispute concerning his facts, of which the most serious is that healthy people are constantly led towards a permanent neurosis by the discovery of some peculiar but unimportant cardiac sound. The same result was produced during the war, when many thousands of healthy men were rejected for military service for the same reason, and it is unhappily true that once a man believes his heart to be unsound he will seldom be dissuaded even by the efforts of many cardiac specialists. But, accepting this, would we be right in rejecting the use of the stethoscope on the heart by students? Surely not. There is no reason to reject this most useful instrument in cardiology, because for a considerable period after the interpretation of murmurs had first been attempted an exaggerated value was placed on their importance by clinical teachers. This is a natural sequence of all medical discoveries, and it may well be that reaction therefrom may be pushing modern opinion too far in the other direction. In France, as in many European countries, the stethoscope is still used with less frequency than in our own; but it is doubtful whether the general knowledge concerning the essentials of cardiac examination is greater abroad than in Great Britain. No doubt the foreign student will emphasise the evidence obtained by his eyes and fingers where our own will tend to exaggerate that given by the stethoscope, but the well-trained and intelligent student will, in all countries, have learnt to obtain a wider series of facts from which to draw conclusions. In the next paragraph of his address Dr. May gives deserved praise to the advance in knowledge which has followed the discovery of the significance of various types of cardiac irregularity. But can it be said that a practitioner who condemns a patient on account of a simple systolic murmur at the apex, will not make equally grave mistakes when confronted with some marked but benign type of cardiac irregularity? It is true that here again mistakes are frequently made by the inexperienced, but they are largely due to the fact that the detection of slight physical signs, whether by the use of the eye, the fingers, or the ear, or by any instrument which aids these senses, can only be arrived at after years of intelligent study. A house physician recently complained of the number of gastric cases admitted to his wards, "What is the interest of a gastric ulcer," he said, "you can't listen to it!" For such melomaniacs there is scanty hope, but we believe that assurance authorities may reasonably expect to see a steady improvement in diagnostic and prognostic skill as regards cardiology, without the abandonment of the physician's silent friend.

GROUP STETHOSCOPY.

A FORM of multiple electrical stethoscope, presented to the Royal Free Hospital, was recently described by Dr. Jenner Hoskin in our columns.[1] A similar instrument was demonstrated to the Faculty of Medicine in Paris by the Dean, Prof. Roger, and Drs. Le Mée, Hélie, and Rist. The apparatus was devised by the Western Electric Company, of America, and loaned to Dr. Le Mée, who, with Dr. Hélie, visited the United States to represent French medicine and promote Franco-American medical relations. This apparatus, appearing for the first time in France, permits at least 600 persons to hear normal and abnormal cardiac and pulmonary sounds by means of numerous receivers, to which stethoscopes are attached. The sounds are reinforced microphonically and also produced by a loud speaker. They are heard preferably with the stethoscope since the general amplifier does not reproduce them so exactly. The apparatus is selective. The periods, or frequencies, of cardiac and pulmonary sounds range from 0 to 1100 vibrations per second.

[1] THE LANCET, Dec. 19th, 1925, p. 1307; Jan. 2nd, 1926, p. 48; and the present issue.

[1] THE LANCET, 1925, ii, 1164.

For normal cardiac sounds the range is from 0 to 130, while different pathological sounds have ranges, respectively, of 130 to 400, 400 to 650, and 650 to 1100 vibrations. Sounds not within the ranges mentioned are automatically excluded. For example, fœtal heart sounds heard during labour are not accompanied and obscured by cries uttered by the parturient woman. Again, sounds of any range desired, of those mentioned above, may be minutely studied by excluding sounds of other ranges. These modalities are obtained by means of so-called "filters," which may be switched into circuit as desired. Some 250 persons present at the demonstration in Paris were all able to hear the sounds thus amplified and transmitted from normal human subjects, from cases of various types of cardiac and pulmonary affections, and from the heart-beats of an anæsthetised dog. Very complete illustrative diagrams aided materially in the clear interpretation of the sounds. The apparatus, already considerably used in the United States in the instruction of medical students, may also be utilised for deliberate clinical study, photographic representation of cardiac and pulmonary sounds, and the preparation of gramophone records for permanent record of interesting cases or for diagnosis at a distance. The apparatus costs about 60,000 francs.

WE regret to announce the death at Glasgow on Jan. 2nd of Prof. J. G. McKendrick, M.D., F.R.S., who occupied the Chair of Physiology at Glasgow from 1876 to 1906. We hope to publish later a short account of his life.

THE death of Prof. Edward Granville Browne, M.B., F.R.C.P., occurred at Newcastle-on-Tyne on Jan. 5th. Prof. Browne was a Fellow of Pembroke College and was Sir Thomas Adams's professor of Arabic in the University of Cambridge.

ON Jan. 5th the Prince of Wales received the honorary diploma of the Society of Apothecaries. The presentation was made at St. James's Palace by the Master of the Company (Dr. T. V. Dickinson), who was accompanied by Dr. A. Hepburn, Dr. R. Whiteside, Mr. Samuel Osborn, and Mr. Bingham Watson (Clerk). The diploma is contained in a casket of silver and shagreen.

DURING the last few months the Secretary of State for Dominion Affairs has foreshadowed improvements in the Colonial Medical Service which, it was hoped, would prove a definite step forward in public health policy. The conditions now announced for service both in East and West Africa have certain desirable features in regard to future tenure, but we lack as yet the assurance that the liberty of existing practitioners to private practice will be respected. Moreover, it would be a distinct hardship for officers engaged on the understanding that they were to serve in one area now to be transferred to another according to the exigencies of the Service. We shall be glad to learn that the new regulations sufficiently safeguard existing agreements.

INDEX TO "THE LANCET," VOL. II., 1925.

THE Index and Title-page to Vol. II., 1925, which was completed with the issue of Dec. 26th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers wishing to receive the Indexes regularly as published should indicate this desire.

DIPHTHERIA IN WALES.—In the colliery village of Bryn, Port Talbot, owing to an outbreak of diphtheria—about 30 cases—the school has been closed for three weeks. The accommodation at Port Talbot Isolation Hospital is overtaxed. In the Amman Valley, Carmarthenshire, diphtheria is also prevalent, and several deaths are reported.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLV.—THE TREATMENT OF HUMAN ANTHRAX.

HUMAN anthrax has gradually become much less prevalent than it used to be, at least in the civilised parts of the world. The slight increase observed in many countries during the Great War did not prove of a lasting nature. In many large European countries, including Great Britain, the number of cases per year nowadays hardly reaches 100, though in Russia it went up to 13,000 cases in 1924. The causes for this gradual disappearance are not far to seek. Anthrax is primarily an animal disease, and as a result of Pasteur's fundamental work, preventive inoculation of susceptible animals has practically stamped out the disease in many countries. Imported dead material (skins, hair, wool) has thus become the only source of infection.

These facts are of importance in connexion with the treatment of human anthrax in two respects. First, in view of the comparative rarity of the disease few practitioners can acquire first-hand knowledge of its manifestations, and the rest have to rely on text-book information for the diagnosis of a disease where speedy recognition is an essential factor in treatment. Secondly, a practitioner can hardly be expected to equip himself for the specific treatment of a disease which he is very unlikely to encounter. The specific serum is not always easily obtained in out-of-the-way places. A reliable chemo-therapeutic method of treatment such as that described below is therefore of considerable value.

The mortality of human anthrax seems to vary, but it is far from negligible. Most statistics do not differentiate between pulmonary and cutaneous anthrax. The majority of cases fortunately are cutaneous anthrax, but even for these one must assume a mortality of about 10 per cent., and this includes treated and untreated cases. It is futile to discuss "virulence" and "disposition" in this connexion, since no information about these points is forthcoming.

Diagnosis.

As F. W. Eurich has pointed out, the early diagnosis of pulmonary anthrax is particularly difficult. E. Fraenkel has recently stated that primary lesions in the trachea and at the bifurcation are the rule in such cases, but inspection of these regions will rarely be practicable. Eurich notes that the pictures of cutaneous anthrax in present-day text-books represent late stages, and that the first symptoms of cutaneous anthrax do not suggest anything like "malignant pustule." However, most patients reach the doctor only when the pustule is well developed.

Microscopical diagnosis is usually described as rapid and easy, but in practice one generally has to be satisfied with a clinical diagnosis. Bacteriological confirmation is, of course, highly desirable. Very extensive œdema around a comparatively small central lesion will suggest anthrax, but only if that possibility is borne in mind. Here circumstantial evidence (occupation, dealings with dead cattle, a new shaving-brush), or in other words, a good case-history, is of at least as much importance as mere clinical appearances.

General Measures.

Specific prevention of human infection seems indicated for persons engaged in specially dangerous occupations, but apart from injections of the specific serum in cases where infection has probably already occurred, no attempts in this direction seem to have been made. As regards the treatment of human cases of anthrax, the surgeon's day has passed. The cautery

is no longer used, and it is generally recognised that incision or excision, short of amputation of a limb, does more harm than good. An exception must be made for those (perhaps hypothetical) cases where the disease is really in its very first stage, and the microbes clearly have not yet made their way into the deep tissues beyond the reach of the surgeon's knife. In all other cases, that is, practically always, the local treatment should consist of rest, and the application of a dressing soaked in a mild disinfectant. Rest can, as a rule, be secured by sandbags. It follows that an anthrax patient should be in bed, fever or no fever, for the affection always tends to become a septicæmia, and this complication should be avoided as long as possible.

Specific Treatment: Serum.

The orthodox specific treatment of anthrax is by means of anthrax serum, with which the names of A. Sclavo, E. Marchoux, and G. Sobernheim are associated. Its method of action is unexplained, and it has not been shown to possess bactericidal properties, at least not in vitro. It certainly contains agglutinins and bacteriotropins, and the presence of antitoxins seems likely. The serum is produced in animals (sheep, asses, or oxen) by means of injections of attenuated anthrax virus, followed by injections of virulent cultures. Good results have been observed with this serum in many cases, especially by Sclavo. At the 1924 session of the Health Committee of the League of Nations various members testified to the excellent results obtained by the use of anthrax serum in their respective countries. It has proved effective even during the last stages of the disease (D. Ottolenghi). In view of these results the members of the Committee suggested that the time had come to undertake investigations for its titration. The exact value of anthrax serum is difficult to gauge where so little is known about the virulence of the infecting material, and the standardisation of the serum has not yet been undertaken. It may be hoped that the keeping qualities of the serum, especially under tropical conditions, will be included in the projected investigations.

The application of the serum, when available, is certainly indicated in all stages of the disease. It must be remembered that good results can only be expected from really large doses. At least 30 c.cm. should be given the first time, preferably intravenously. The following daily doses may then be made smaller, and can be given subcutaneously. Acting on these principles Sclavo succeeded in reducing the mortality, calculated from a large number of cases, from 24 to 6 per cent. Some recent authors advocate very large doses, and these in combination with excision. From the nature of the disease it is quite likely that cases will occur where serum is not available, or at least not readily available, in sufficiently large quantities. Even then surgical measures should, in my opinion, be avoided, for there are other efficacious measures (see below). Certain curious observations by R. Kraus, working in South America, have attracted some attention. He claims that the serum of normal, untreated sheep and cows possesses protective and curative properties against anthrax infection, which are quite comparable to those of the specially prepared serum. These observations, when put to the test by others, have not been confirmed, but quite recently Kraus has again maintained that his observations, based both on clinical and laboratory experience, were correct.

Chemical Treatment.

Efforts to control anthrax infection in man with injections of such chemical preparations as auramine or argochrom have not yet got beyond the discouraging stage of "encouraging results."

Salvarsan.—Treatment with neosalvarsan (or substitutes) was inaugurated by F. Becker. Although splendid results were obtained by him, and shortly afterwards by others, this form of treatment has not come into general use, nor has it received much encouragement from writers of text-books. In medical journals may be found an occasional report on the excellent results obtained through the use of this drug. Eurich only advises its use when serum fails or is unobtainable. Quiet recently C. M. Rovsing has again emphasised the virtues of neosalvarsan, but the drug has not received the attention which it deserves. In 1918 I introduced this form of treatment into South Africa. It was then used in two cases, and these not only survived their infection, but made a particularly rapid recovery. This was all the more striking because in the preceding year, working in the same district, I had attended two similar cases, and in spite of surgical measures both were dead within a week. It must be added that anthrax serum was not then, and probably is not now, available in South Africa, or at least not readily available.

During the last few years, at the Pretoria Hospital, we have had a good opportunity of testing the value of the salvarsan treatment. Since 1921 all cases of anthrax entering this hospital have been treated exclusively with salvarsan. We now have records of a series of over 40 consecutive cases, and there has not been a single death. It must be admitted that we have had no cases of pulmonary anthrax. Some cutaneous infections, however, were very severe, and one or two were admitted in what seemed to be a moribund condition. A striking instance was that of a youth, employed at the Onderstepoort Veterinary Research Laboratory, who against all warnings had been careless with the very virulent anthrax cultures grown in that laboratory. A huge sore developed on his lip, and he arrived at the hospital in a septicæmic condition. A few injections of neosalvarsan saved even this patient.

As a result of this series of successful cases the Secretary for Public Health of the Union of South Africa has sent a special circular to all district surgeons of the Union, in which their attention was called to the salvarsan treatment. This led to its more extensive use, with, as far as we know, complete success. It is noteworthy that during these same years a few deaths from anthrax have been recorded in the Union and that in these cases salvarsan was not tried.

The Routine Followed.

At the present time the routine treatment of anthrax at the Pretoria Hospital is as follows. Directly after the suspected patient is admitted, smears are examined from the sore, preferably from the vesicles. In this way a diagnosis can be made with a probability approaching certainty in a few minutes. In doubtful cases this has, of course, to be confirmed culturally. The next process is an intravenous injection of 0·6 g. to 0·9 g. neosalvarsan, the exact dose depending on the condition of the patient. The worse the patient appears to be, the bigger the dose. Anthrax patients apparently stand large doses of salvarsan quite well. The patient is put to bed, a mild antiseptic dressing (weak formalin solution is very suitable) is applied, and the part is immobilised. The injection of salvarsan is repeated the next day. A rise of temperature is a common result of the injections. Some cases require a third injection on the fourth day of treatment, but this is exceptional. As a rule the symptoms, especially the œdema, show definite improvement on the third, sometimes on the second day of treatment. The temperature comes down to normal in five or six days, the necrotic part drops off, and generally a surprisingly small scar is all that remains.

The salvarsan treatment of anthrax has never failed us yet, although its theoretical foundation may be lacking. The obvious advantages are that it requires no special outlay nor preparations, that it can be applied at a moment's notice, that it is safe, sure, and quick, and that the lesions heal with a minimum amount of disfigurement.

ADRIANUS PIJPER, M.D. Leiden,
Pathologist to the Pretoria Hospital, the Pretoria Municipality, and the Pretoria Mental Hospital.

Special Articles.

A DISCUSSION ON FRACTURES IN THE NEIGHBOURHOOD OF THE ANKLE-JOINT.*

II.—THE OPERATIVE TREATMENT OF ANKLE FRACTURES.

BY W. H. TRETHOWAN, F.R.C.S. ENG.,
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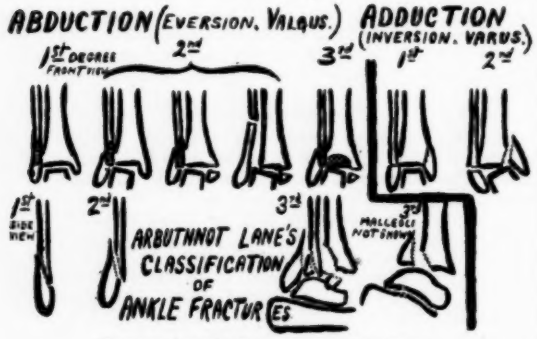
MY remarks are directed to the classification, causation, and treatment of malleolar fractures. From none of these aspects is the subject so difficult as the careful and academic survey of the opener of this discussion would suggest. For the purposes of teaching and formulating treatment a simple and clear-cut idea of the one or two principles involved, and the definite types of fracture that occur, would seem to be desirable.

For simplicity, accuracy, comprehensiveness, and practical applicability there can be no better classification than that of Arbuthnot Lane, who, 25 years ago,† was the first to group the various malleolar fractures in such a way that their relationship to one another could easily be understood. Further, he made clear beyond doubt the mechanics of their production, and—the greatest principle involved—he emphasised the importance of perfect anatomical reconstruction as a prime necessity for the complete restoration of function. Lane, with his grasp of skeletal mechanics,

FIG. 11.



Lane's classification of ankle fractures.

is one of the greatest orthopædic surgeons we have had, a fact which can be appreciated only by the few who will look beyond the details of "plates and screws" for the general principles he postulates. Lane's conception of "traumatic" or "mechanical" arthritis resulting from skeletal mal-alignment, occurring as well in postural, occupational, and pathological conditions, as in trans-articular fractures, and causing the eventual breakdown of function of a joint, is one of the most important factors in determining methods of treatment in bone and joint surgery.

The recent comprehensive work on ankle fractures by American writers, referred to by the opener of this discussion, adds nothing to what has already been done by Lane, but serves rather to cloud a subject already clarified to simplicity itself. Lane classified the ankle fractures according to the degree of deformity, and showed there were only five fractures, all typical and constantly occurring (Fig. 11).

* The introduction to the discussion, by Mr. Harry Platt, appeared in the last issue of THE LANCET.

† The Operative Treatment of Fractures, Med. Pub. Co.

(1) *Abduction Fractures* (eversion, or valgus).—Three degrees, according to the displacement.

First degree: Oblique (torsion) fracture of the fibular malleolus. Line of infraction runs from above and behind downwards and forwards. Inferior tibio-fibular ligament remains intact. No displacement.

Second degree: Fracture of fibular malleolus as in the first degree, but with displacement of malleolus (and with it the astragalus and foot) outwards and slightly backwards. Fragments tend to telescope on themselves, causing shortening of the fibula. The astragalus is tilted, its outer and upper edge tending to lie at the spot where the tibia and fibula meet (lower end of inferior tibio-fibular ligament). As permitting this outward displacement of the foot in the second degree fracture, either the inner malleolus is cracked transversely at its base, by traction, or it is left intact, and, instead, the internal lateral ligament of the ankle-joint is torn through. Thus occur two subtypes of the second degree fracture. A third subtype is occasionally seen, when the fibula breaks *above* the inferior tibio-fibular ligament. This ligament itself gives way, and the lower fibular fragment becomes definitely separated from the tibia. To this third modification of the second degree fracture the term "Dupuytren's fracture" is occasionally given.

Third degree: To the malleolar fractures characteristic of the second degree is added a fracture of the posterior edge of the lower end of the tibia. The astragalus, with the foot, slips backwards, and the clinical picture produced is that of partial or complete dislocation of the ankle-joint. There may also be some outward displacement, as in the second degree, but the posterior displacement of the foot is the chief feature.

(2) *Adduction Fractures* (inversion, or varus).—Two degrees, according to the displacement.

First degree: There is a transverse fracture of the external malleolus at its base, at the level of the lower end of the tibia, the malleolus being broken by a "pull" upon it as the original violence tends to displace the foot inwards. The internal malleolus is broken obliquely vertically at its base by a "push" thrust of the displacing foot. But the fragments are not displaced, and the astragalus remains in perfect relationship with the lower end of the tibia.

Second degree: This differs from the first degree only in that the astragalus, with the foot, and also both malleoli, are displaced internally.

The method of production of these fractures is easily comprehended. The *abduction* fractures occur on forcible inward rotation of the abducted lower limb, aided by the momentum of the swinging trunk and a partly flexed knee, when the foot is firmly fixed on the ground. The foot is "torsed" off the leg by a violent external and valgus twist relative to the leg. The amount of displacement is merely a matter of the degree of the original fracturing force. If there be added a forward thrust on the lower limb (and therefore backwards on the foot) when, as in slipping on the edge of a step or on some inclined surface, the foot be also forced backwards, we get the backward thrust in addition to the external twist on the foot, and the characteristic third degree fracture results. Occasionally, in a purely backward thrust upon the foot, the posterior border of the lower end of the tibia may be broken off, permitting backward dislocation of the foot, but without fracture of the malleoli. This lower tibial fracture has recently been re-observed and re-described, but long ago Lane described it as an essential part of the third degree displacement. The *adduction* fractures result from a forcible inversion of the foot, and are further degrees of the violence which commonly produces the usual type of sprained ankle.

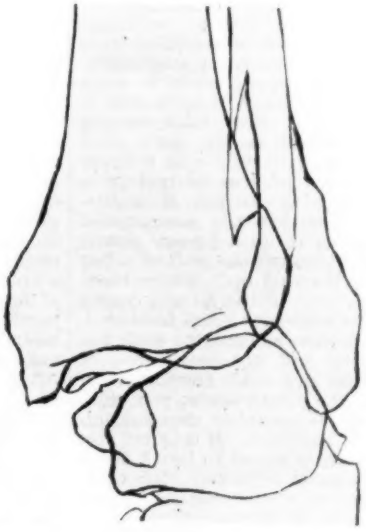
The mechanics of the production of abduction fractures of the ankle are the same as for many other injuries of the lower limb resulting from indirect violence. It is a matter of accident that the line of fracture actually passes through the ankle-joint, rather than occurring higher up in the limb. The line of fracture is relatively higher in the fibula, passes through the ankle-joint, and is lower on the inner side, where it passes through either the inner malleolus or the internal lateral ligament. In spiral (i.e., indirect) fractures of the leg bones the fibula is nearly always broken at a higher level than the tibia. This oblique line of cleavage occurs at different levels in various

cases of fracture of the tibia and fibula. In still other cases the same violence may result, instead, in damage to the internal lateral ligament of the knee-joint and semilunar cartilage derangement; or, again, in oblique fractures of the femoral shaft, or in fracture of the neck of the femur in more elderly subjects.

FIG. 12.

Reconstruction of posterior dislocation of foot at ankle-joint. (Recent injury.) Posterior half of lower end of tibia displaced backwards with the foot, but malleoli *not fractured*.

FIG. 13, A.



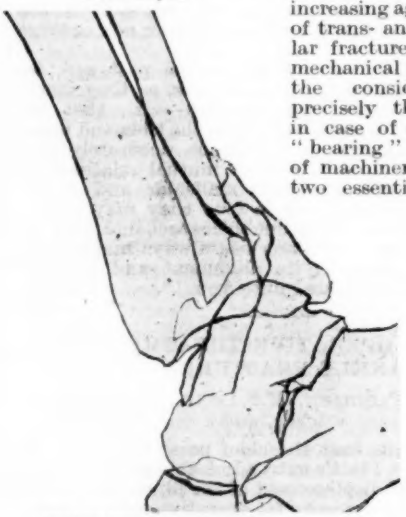
Third degree abduction fracture of six months' duration. Malunion.

FIG. 13, B.

Patient aged 56. Third degree abduction fracture of six months' duration. Intramedullary autogenous graft to reconstruct fibula. Three ivory pegs to sustain both malleoli.

The gravest type of fracture is that involving a joint, where a part or the whole of one bearing surface is displaced relatively to the other. The resulting permanent disability is proportional to the displacement, and to the age of the patient—since the capacity for skeletal adaptation (Wolff's law) lessens with increasing age. Treatment of trans- and intra-articular fractures is a purely mechanical problem, and the considerations are precisely those applying in case of damage to a "bearing" in any piece of machinery. There are two essentials: (1) fair and even bearing of the mutually adapted moving parts must be restored; (2) the bony ends (representing the steel foundation in an inanimate machine) may at times require to be "re-bushed" with the friction-bearing cartilage which represents the engineer's softer gun-metal or white-metal bearings. At present our capacity for re-bushing a damaged joint is very little. In inaccurate reposition of the mutually apposed and intricately-shaped bearing surfaces of a joint damaged by fracture, the friction is not evenly distributed, is localised, and is excessive. As the deranged engine bearing would run hot, grate, squeak, become restricted in movement, and finally seize up or melt, so the injured human bearing responds with exactly the same symptoms.

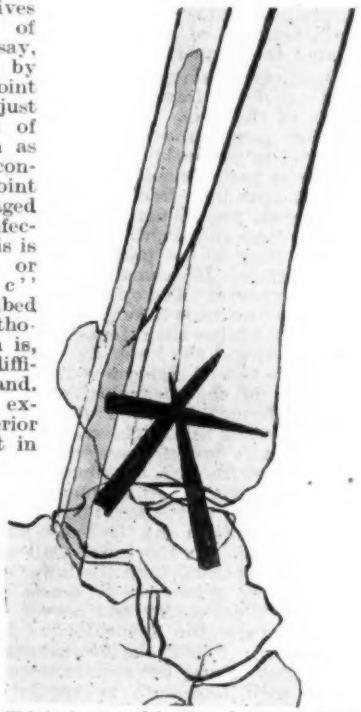
FIG. 14, A.



Patient aged 56. Third degree abduction fracture of six months' duration.

Failure accurately to re-appose related joint surfaces gives permanent loss of efficiency—as we say, disability — this by excoriation of joint surfaces, giving just the same signs of inflammation as occur on the continued use of a joint irreparably damaged from toxic or infective causes. This is "mechanical" or "traumatic" arthritis, as described by Lane. The pathology of malunion is, therefore, not difficult to understand. Who has not examined the interior of an ankle-joint in the case of an old malunited Pott's fracture? Without accurate reconstruction of the ankle-joint in malleolar fractures the onset of traumatic arthritis is inevitable sooner or later, leading to lowered efficiency. Posing as

FIG. 14, B.



Third degree abduction fracture of six months' duration. Intramedullary autogenous graft to reconstruct fibula. Three ivory pegs to sustain both malleoli.

surgical mechanics, we must be able to reconstruct a joint accurately. This is the only principle involved. The method is a matter of detail, according to the needs of the case or the capacity of the surgeon-mechanic; it may be manipulative or operative. The point of view I put forward is that, granted accurate anatomical reconstruction is of vital importance, in many cases reduction by manipulation alone, to a degree of accuracy sufficient to ensure against the gradual onset of disability from mechanical arthritis in later years, is impossible. Therefore there should be a freer resort to open operative correction. This advocacy of open correction presupposes a mechanical ability, and a surgical technique beyond reproach. It is the duty of a surgeon-mechanic to be able, fearlessly and without anxiety, to deal with a human joint as intimately as the mechanic does with a machine bearing. Manipulative reconstruction in the more severely comminuted cases is on a par with trying to do a jig-saw puzzle by manipulating the pieces through the wall of a bag in which they are inaccessibly tied up. Where there is any displacement at all, even in the second degree valgus fracture with fibular malleolus alone fractured, I prefer to open up the fracture, as ensuring both the patient's complete recovery and my own peace of mind. If you elect to treat any ankle fracture with displacement by manipulative means alone, you must be careful to ascertain by skiagraphic examination that the reduction has been complete. If it is not you will have failed, and the joint is bound to break down sooner or later, from traumatic arthritis, with complaints from the patient of "rheumatism" and increasing lameness. Where no displacement exists (first degree), or when it is really corrected by manipulation, nothing more is required than the "bi-valve" plaster-of-Paris, and the application of massage within a day or two. But judging from the frequency of bad results, which we as orthopædic surgeons are so often asked to treat "with a boot," it would seem that the manipulative and plaster method in many cases meets with about the same degree of success as we might expect to attend the efforts of a motor mechanic who elected to tackle the main bearings of a car by putting plaster-of-Paris around the bonnet.

Open correction does not necessarily imply internal fixation of the fragments; this will depend on the needs of the case. Foreign material introduced for fixation purposes should be minimal. Absorptive material is preferable, but often the tension of the displaced parts necessitates the use of metal screws. I never open up a fracture without being prepared to use screws, pegs, nails, wire, sutures, or living graft, as may seem expedient. Fragments must be replaced so that they do not project and irritate the opposite joint surface. If so small as to be unfixable they are better removed. The operation for the second degree of valgus fracture is through a curved peroneal incision, behind and below the external malleolus. The fibula is re-aligned, and the lower fragment is screwed to the tibia by a 1½ to 2 inch screw driven up obliquely from the base of the malleolus, with care to avoid its passing through the outer upper corner of the ankle-joint. I prefer this single screw to a 4 to 6-hole Lane's plate on the posterior surface of the fibula. In the third degree fracture, the fibula is first re-aligned and fixed, as above. Then, by means of a long incision on the inner side of the leg, midway between the inner border of the tibia and the tendo Achillis, and curving forwards beneath the inner malleolus, the posterior fragment detached from the lower end of the tibia is fixed by one or two screws, access being between the posterior tibial artery and nerves (which are drawn forwards) and the flexor longus hallucis (retracted backwards). Finally the internal malleolus is replaced, and it may or may not require some fixation. A back splint with foot-piece is applied for two weeks. Active movements start on the third day, massage a few days later, and over the whole field when the stitches are removed in 14 days from the date of the operation. The patient may begin to take weight on the foot in four weeks from the operation. Failure to institute early movements delays the restoration of function, just as after prolonged fixation in plaster-of-Paris, and the scars may add to this tendency (Figs. 12–14, B).

With regard to fractures of some duration (malunion), the only operation that can be of any use is a complete anatomical reconstruction of the joint (see Figs. 13, A–14, B). I have reconstructed such joints up to a period of 18 months after the fracture. After two years the degree of ensuing mechanical arthritis would make the operation not worth while, and an arthrodesis of the ankle-joint, or a Syme's amputation, would be the only possible operative remedies. In these late cases the gratifying feature is the complete freedom from pain which the operation affords, although in any case operated upon after about three months from the time of the accident complete restoration of plantar- and dorsi-flexion movements is scarcely to be expected. The difficulty in these cases is the restoration of the substance of the fibula. In an abduction fracture the fibula shortens by overlapping of fragments, and even if it be cut as carefully as possible along the line of the original fracture there is bound to be a gap between the fragments when the ankle is completely reduced and the fibula re-aligned. After a trial on many methods—e.g., cutting the fibula above the fracture and grafting the gap, while leaving the original fracture intact—I find it best to cut the fibula as nearly as possible along the original line of fracture, reduce the ankle dislocation, re-align the fibular fragments, and then put an intramedullary graft, 5 inches in length and taken from the crest of the same tibia, and filed off to form a firm cylindrical bony peg of $^3/_{16}$ to ¼ in. diameter, up through the central canal of the fibula, after drilling out the central axis of the external malleolus and the shaft of the fibula for several inches above. The graft is driven up from below, from the tip of the external malleolus, the fibular fragments being held in correct position meanwhile. The gap in the fibula is thus bridged by autogenous living bone, and is gradually obliterated and the bone consolidated. An ivory peg similarly used seems to encourage no restoration of the fibular gap. The replacement of the fragment from the back of the lower end of the tibia, and of the inner malleolus, can be procured through an incision along the postero-internal aspect of the leg and ankle, as in the operation for the recent third degree abduction fracture. Here a simple fixation, by wire nail or ivory peg, will suffice.

The "classical" operations of the past age, for malunited Pott's fracture, are useless, as they ignore the only mechanical consideration—viz., that the bearing surfaces of the lower end of the tibia and upper aspect of the astragalus shall be accurately and horizontally restored in correct mutual relationship. In this condemnation come malleolar and supra-malleolar osteotomies. It is true they may give a superficial cosmetic result, but their mechanics will not bear examination. As Lane has always maintained, "restore the fibula in its alignment and length." The rest "shall be added unto you."

III.—THE OPERATIVE TREATMENT OF ANKLE FRACTURES.

BY H. A. T. FAIRBANK, M.S. LOND., F.R.C.S. ENG.,
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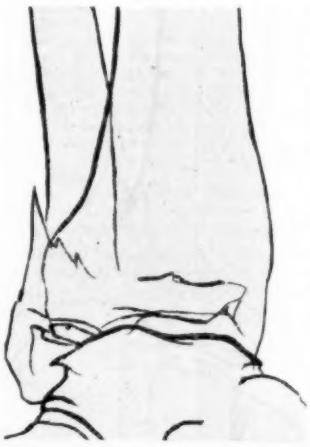
IT seems to me that the chief point that calls for discussion in Mr. Platt's most admirable opening paper is the amount of displacement of the fibular fragments in relation to the necessity for operative reduction and fixation. For the sake of argument I show slides of a case with the usual oblique fracture of the fibula, but without obvious displacement of the astragalus and without fracture of the tibia (Fig. 15). In such a case, when young or middle aged, I should certainly operate. Greater difficulty is experienced in maintaining reduction than in the actual correction of the deformity. Even when the position of the astragalus

is perfect, the slightest tilt of the lower fragment of the fibula spoils the fit of the bones forming the ankle joint, and any instability in the joint means grave risk of arthritis and disability. I have seen large numbers of such cases who continued to have pain, &c., for many months and years. Even with an open wound the difficulty often experienced in holding the fragments in perfect position while a plate and screws are inserted is very striking. Absolute perfection in the replacement is essential, as without it the fit of the joint will still be imperfect. When a case with minor displacement is only seen four or five weeks after the accident, operation is often inadvisable because the callus increases the difficulty of obtaining the perfect restoration of the fragment which, in such cases, alone justifies treatment by the open method. If I understood Mr. Platt correctly, he said that the average time that elapsed before the patients in his series were finally discharged, was six months, and he was disappointed with the results in quite a number of these. But when these cases were investigated after a further period of several months had elapsed, he was gratified to find many of those discharged with imperfect results had recovered and were at work. Surely this statement might be used as an argument in favour of the more extended use of operative methods which would lead to reduction in the length of after-treatment necessary.

FIG. 15.



Oblique fracture of fibula. Type of fracture suitable for operative reduction.

Lastly, I should like to call attention to those cases of partial or complete separation of the lower epiphysis of the tibia resulting from forcible abduction. If complete, the fibula often gives way transversely in the lower third. Perfect reduction is often difficult without open operation. When the separation is incomplete, growth at the epiphyseal line is interfered with, and a progressive varus deformity not uncommonly results.

IV.—MANIPULATIVE TREATMENT.

BY W. A. COCHRANE, M.B., F.R.C.S. EDIN.,
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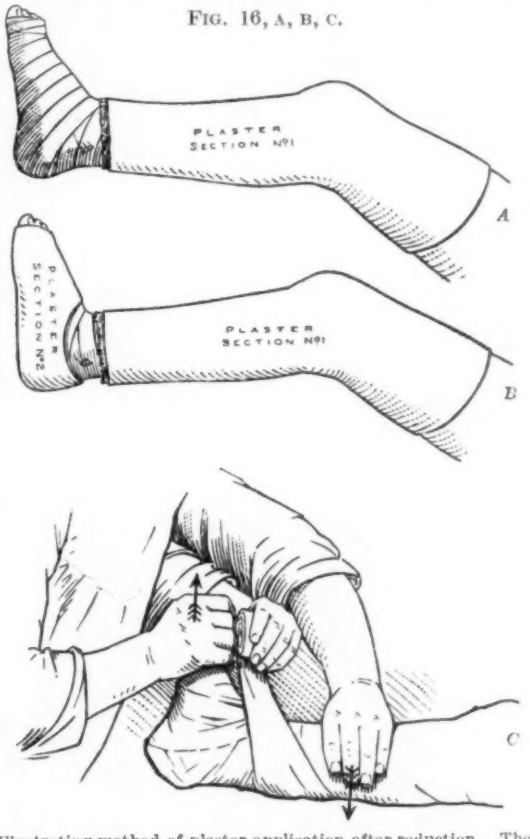
DISABILITY figures for fractures involving the different joints are readily obtained from the Industrial Board of one of the American States. In a three-year period, 1921–24, 2156 joint fractures are recorded, and of these 558 were ankle fractures. The average period of total disability was 13·6 weeks. The figures obtainable from the records of the Royal Infirmary, Edinburgh, represent a recent series of 40 cases. The average period of total disability was about 15 weeks. There has been permanent partial disability in six cases. All the others have returned to their old employment. Operative treatment was not employed in this series.

I have been interested in Mr. Platt's account of the mechanism of production of the various fractures about the ankle, and the Association is indebted to him for drawing attention to the classical work of Ashhurst. It is the first account of research in this field since the days of Astley Cooper. Ashhurst's description of these cases is remarkable for the great frequency of spiral fracture of the lateral malleolus, without appreciable displacement; 60 per cent. of his series fall into this category. His classification of fractures of the ankle according to their mechanism of production is of great clinical importance. The subject is simplified by so doing and rational diagnosis and treatment made easier for the teacher and student. Another useful way of considering joint-fractures is to differentiate them into juxta-articular and intra-articular fractures. The former are situated in close relationship to the joint, but do not involve the articular surface, while the latter penetrate into the joint. The juxta-articular fracture is important chiefly because of the peri-articular exudation and of the stiffness of the joint which is apt to follow if active movements and massage are not instituted early.

In the case of the intra-articular fracture, the chief consideration is the possibility, if complete anatomical replacement is not secured, of a permanent alteration in the axis of the joint. Angular deformity is the worst displacement and is responsible in many cases for a disabling traumatic arthritis when weight-bearing is resumed. The injury to the cartilage also may result in the formation of obstinate intra-articular fibrous adhesions. The recovery of function

FIG. 16, A, B, C.



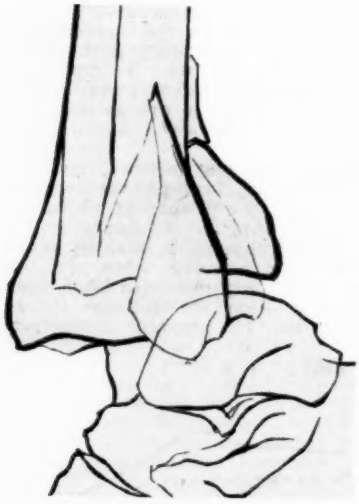
Illustrating method of plaster application after reduction. The "three-piece" plaster.

demands, therefore, that complete anatomical replacement should be the goal and that this must be followed up by early active movement. My experience has been that it is not unusual for the minor displacements to be overlooked by the practitioner. It is he and not the orthopædic surgeon who sees and treats most of the fresh cases. I would emphasise the importance therefore of teaching the physical signs of displacement very carefully to students, because it is a fact that a large proportion of these cases, occurring often in the country, are not X rayed.

The temptation is to put the leg in a splint and to trust to massage and early movement.

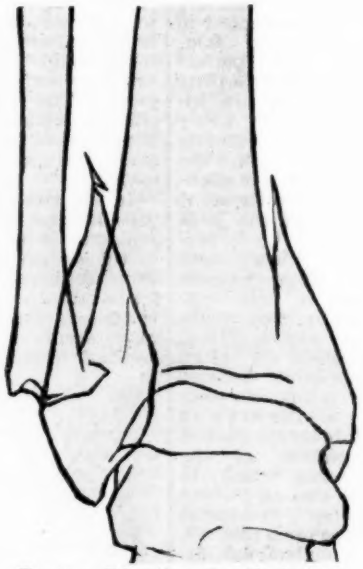
As regards the method of reduction of a Pott's fracture, the knee should be flexed and the posterior

FIG. 17, A.



Fracture dislocation of ankle (lateral view).

FIG. 17, B.



Fracture dislocation of ankle (antero-posterior view).

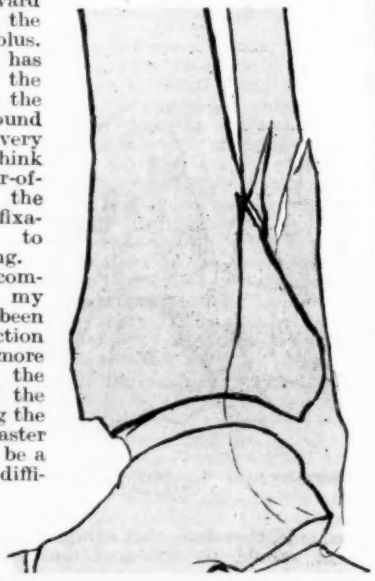
FIG. 17, C.

Same fracture after manipulative reduction and plaster. Displacement uncorrected.

displacement forcibly corrected, with the foot in plantar-flexion. The foot should then be forcibly dorsiflexed and inability to secure this should be regarded as indicative that reduction is incomplete. The lateral displacement should then be corrected by inward pressure upon the lateral malleolus. When reduction has been secured, the movements of the foot should be found to be free in every direction. I think that a plaster-of-Paris casing is the best means of fixation, bivalved to permit of swelling.

In the more complicated cases, my experience has been that, while reduction may be secured more or less easily, the maintenance of the reduction during the application of plaster or a splint may be a matter of great difficulty. A plaster-of-Paris casing applied in sections is often of value as being more precise and dependable. Figs. 17, A and 17, B show a fracture-dislocation of the ankle, with backward and inward displacement of the foot in relation to the leg. Fig. 17, C shows that the reduction and fixation in plaster have been unsuccessful. While the casing was the plaster was applied from a point two fingers'-breadths above the level of the ankle to the mid-thigh (Fig. 16). The second section was applied to the foot, of the dimensions and extent of a shoe. This left the ankle free. The two casings were allowed to set. The manipulations to secure reduction were then made by grasping the two casings. An assistant then united the two plasters by the turns of a third bandage. Fig. 18 shows that reduction had been secured by this means. The final result was excellent, the patient walking as well as ever in three months' time.

FIG. 18.



Shows perfect reduction obtained by method illustrated in Fig. 17. Figs. 16–18 are taken from the *British Journal of Surgery*, October, 1924.

V.—REMOTE RESULTS OF TREATMENT.

BY S. T. IRWIN, M.CH. R.U.I., F.R.C.S. EDIN.,
HONORARY SURGEON, ROYAL VICTORIA HOSPITAL, BELFAST.

I HAVE assembled statistics from the records of the Royal Victoria Hospital, Belfast, during the two years 1923–24. The figures are based upon a consideration of all the cases of fracture at the ankle admitted to the wards of the hospital during these years. They have been treated in the various surgical wards to which fractures are admitted as emergency cases on the "take-in" day. There were during the two years a total of 75 cases. These were communicated with by letter and invited to answer a number of questions, the main object being to find out whether or not the patient had returned to work. Where no replies were received the addressees were visited. In this way 62 cases were located out of a total of 75, and of these 62 cases five were found not to be working and two were dead from causes unconnected with the injury. Of the five who were out of work one had worked until he developed an ulcer of the leg. This case will be referred to later.

The important questions to decide were: (1) whether or not the patient was at work; (2) the total period of incapacity. It was not possible in the time to go fully into other questions, such as whether the patient suffered pain, whether there was any deformity, or whether the patient was lame. Investigations of case-sheets and X ray films supplied the data upon which the cases were classified, it having become

obvious early in the investigation that many of the diagnoses were faulty. The term "Pott's fracture" was used in the records to include a very diverse group and so, more or less, arbitrarily the following subdivisions of the fractures was made into four types:—

Type A, "*Pott's Fracture.*"—To include those cases in which there was a fracture of the fibula near the lower end associated with displacement of the foot outwards and some definite injury to the inner ankle as well.

Type B.—*Fracture of the external malleolus* below the tibio-fibular ligament, the internal malleolus remaining intact. No doubt this group will include some cases which upon more precise and prolonged investigation will be found to be really examples of Pott's fracture, but in none of them was there obvious displacement of the foot.

Type C.—*Fracture of both malleoli* involving the joint on both sides.

Type D.—*Various fractures* usually associated with *considerable comminution* of the tibia and fibula. This group includes two cases of "Dupuytren's fracture."

This classification was found to have certain advantages—for example, all fractures included under Type B gave uniformly good results, probably because there was no displacement of the foot; their stay in hospital was brief, the average for the whole group being just over a fortnight.

FIG. 19, A.

Pott's fracture showing gross deformity after attempt at fixation in splints. (Mr. H. P. Malcolm's case.)

Compound Fractures.—So far as the records go only three cases are known to have been compound. All of these were able eventually to return to work, but they are associated with a very prolonged period of incapacity—one for 70 weeks and another for 104 weeks.

Taking the types in order—

1. Under Type A 30 cases occur in the records. Twenty of these were followed up and 19 were at work.

The only case of this type not at work was admitted on Christmas Eve, 1924, profoundly drunk. His age was 69. He had a wound over the inner ankle which, however, did not appear to communicate with the seat of the fracture. He was a saddler by occupation. Within the last few days he has been examined. He walks without pain, the movements of the joints are free, there is a very slight degree of valgus. Except for this and for his age there seems to be no reason why he should not do a saddler's work.

2. In Type B, fractures of the external malleolus without displacement, the records show 14 cases. All these were found and all were at work.

3. In Type C, fractures of both malleoli, involving the joint on both sides, there were 11 cases. Eight of these were found and seven were at work.

The eighth case, a young woman aged 26, was examined. The position of the foot was good; there was no obvious cause to be found for her alleged disability nor was she complaining of pain or lameness.

4. Type D. There were 20 cases in this group of whom 16 were found. Three of these were not at work.

The first was a man aged 40, whose injury occurred two years and two months ago. The fracture was 4 inches above the external malleolus with comminution of the tibia. The result of this case was anatomically bad, especially as regards alignment, there being marked adduction at the seat of the fracture, some arthritis in the ankle-joint, considerable pain, and lameness. Added to the bad alignment of this there was also synostosis between the bones above the seat of the fracture.

The second case under this type not at work was a woman aged 56, off work for one year and six months, whose fracture affected both bones complicated by the opening of the ankle-joint. The foot was in a position of equinus and there was considerable ankylosis and faulty alignment.

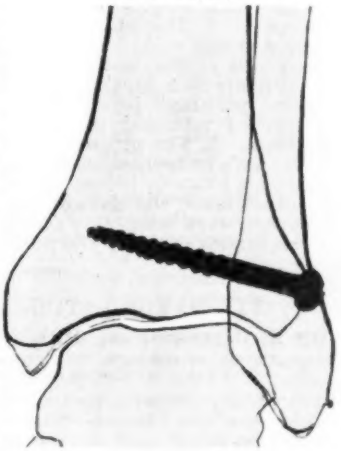
The third case in this type has worked but has had recently to discontinue on account of an ulcer developing over the subcutaneous part of the tibia. He is a young man and the accident was caused by his being thrown off a motor bicycle, the foot striking the mudguard of a motor-car with which the bicycle had collided. This man had a compound comminuted fracture at the lower end of the leg bones. All the structures behind the internal malleolus were divided. As the result of treatment he had ankylosis both of the ankle and the subastragaloid joints but comparatively free movement in the anterior part of the foot. The complication of an ulcer at the seat of one of the old wounds over the subcutaneous part of the tibia is very serious; such ulcers are prone to recur, to cause a subjacent periostitis, and it may yet result in amputation.

These figures are grouped in the following table. Excluding two cases dead there were 60 cases found.

Type of fracture.	Found.	Working.	Per cent.
Pott's	20	19	95·0
External malleolus	14	14	100·0
Both malleoli	8	7	87·5
Various	18	15	83·3
Total	60	55	91·6

Next the average time off work in each of the types was considered. The small number of the cases makes the results less valuable, the best average period of disability occurring in Type B, where the average is 20 weeks and the average stay in hospital 15·6 days. The second best occurs in Pott's fractures, with the average period of disability at 22 weeks. Here the figures are arrived at from the consideration of 19 cases. For the fractures of both malleoli involving the joint on both sides the period of incapacity over 7 cases amounts to 38 weeks on average. This period seems unduly prolonged, but the group happened to contain a very high proportion of elderly patients. For the comminuted fractures of the tibia and fibula over 16 cases the average period of incapacity amounted to 28 weeks.

FIG. 19, B.



Same fracture after fixation by a single screw nail.

As to the method of treatment in these cases, out of a total of 75 cases only 4 had an open operation, 3 primary and 1 secondary. The custom in the Belfast school has been to treat the majority of these fractures on a Cline's splint with anterior and posterior splints as recommended by the late Prof. Gordon. They are usually reduced under an anæsthetic. It has several advantages: 1. It allows the leg to be treated with the knee flexed. 2. The splints being of wood allow an X ray photograph to be taken after the fracture has been set. 3. It provides for maintaining full adduction of the foot. 4. With Gordon's anterior and posterior splints both pes equinus and backward

displacement of the heel are prevented. 5. Massage can be used early without risk of displacement, the limb resting on the outer splint. In a few cases belonging to Type D the Cline's splint was discarded in favour of a Thomas bed splint with Sinclair foot-piece. One surgeon prefers the use of moulded plaster-of-Paris to the Cline's splint.

A special word is necessary for the three cases who had primary operations.

The first of these was a torsion fracture of the Pott's variety with an oblique fracture immediately above the external malleolus in which it was found impossible by splints alone to maintain correction (Figs. 19, A and B). Here a long screw nail was introduced to bind the malleolus to the tibia above the level of the joint after full correction had been obtained. This nail was removed under local anæsthesia a fortnight later. The second case was a comminuted fracture, which after several attempts at re-position had failed was treated by wires encircling separately the tibia and the fibula. The third case was the compound fracture already referred to. As Mr. Platt has said, "This is not, strictly speaking, a fracture of the type which I have dealt with and therefore the fact that it was operated on can hardly be used as an argument against conservative as compared with operative methods."

The conclusions arrived at from a consideration of the 60 consecutive cases are as follows: 1. The results of conservative treatment combined with operation in specially selected cases would seem to offer an efficient method for indirect violence fractures at the ankle—in the series of 60 consecutive cases 91·6 per cent. being at work. 2. That the period of incapacity in all the cases, extending as it does to 20 weeks in a simple fracture of the external malleolus to double this period in some of the other fractures, seems to be unduly prolonged. 3. With a few exceptions the chances of the patient returning to work after fracture in the neighbourhood of the ankle-joint is comparatively good. 4. Fractures involving the ankle-joint are seldom compound. If fractures in this region be compound it is evidence in favour of a direct violence fracture. 5. Disability following fractures in this region is due to bad alignment of the fragments, to synostosis of the bones, or to arthritis in the joint. 6. Patients over 50, and especially those over 60, have a more prolonged period of incapacity and much less chance of returning to work at all than younger patients. 7. The prognosis in cases of men drawing workmen's compensation and in injuries due to motor accidents seems to be less favourable than in fractures of other sorts, the date of the industrial labourer's return to work being often decided by his shop steward or his branch secretary and not by his medical adviser.

VI.—MANIPULATIVE TREATMENT.

BY R. OLLERENSHAW, M.D. MANCH., F.R.C.S. ENG.,
ORTHOPÆDIC SURGEON, SALFORD ROYAL HOSPITAL, AND ROYAL MANCHESTER CHILDREN'S HOSPITAL.

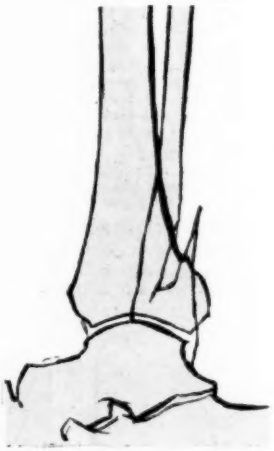
ON the practical aspect of this question I would like to say that I have no bias either in favour of open operation as opposed to more conservative means of treatment, or against it. I am strongly of opinion that operation should be reserved for those cases where satisfactory apposition and maintenance of that apposition cannot be achieved by manipulation and the usual splints or plaster.

In the fracture clinic of my orthopædic department at Salford Royal Hospital I have had admitted to my wards during the past six months 43 cases of fracture of the long bones. There have been 11 operations only during that period. Five of these were cases sent to me "second-hand"—mal-union or non-union of fractures dating back three months to two years, so that only six primary open operations were done, and I find that with each succeeding year I do fewer primary open operations on fractures. The following are two cases of the worst type of ankle fracture which show completely satisfactory reduction by manipulation. The first (Fig. 20, A) was a very severe type of Pott's fracture and after reduction (Fig. 20, B) there is still a small gap between the edges of the fibular fracture. This is rather more than the gap in one of the cases just mentioned where operation was recommended. I do not think operation should be done here, and in this case of mine the end-result was perfect. Although I agree that a good reduction of the deformity is essential, it is not necessary to secure

FIG. 20, A.

Ankle fracture with gross displacement.

FIG. 20, B.



After manipulative reduction.

the most absolute precision in order to get complete return of function. Fig. 21, A shows the nearest approach to what I understand by a "Dupuytren fracture" seen in my department in seven years, and yet, although the displacement is so gross, the reduction (Fig. 21, B) shows good apposition, though not perfect, and the end-result was in every way excellent.

I believe that a very useful aid in difficult compound fractures above the ankle where the tibial diaphysis

FIG. 21, A.

Ankle fracture with gross displacement (Dupuytren type).

FIG. 21, B.

Same after manipulative reduction.

is projecting through the skin is to reduce the fracture and to maintain its position by plating the fibula.

Through a small incision over the fibula a plate is fixed holding the fibula and controlling the lateral displacement perfectly. After healing of the wound has occurred and the fracture has become steady—four weeks later—the plate is removed under local anæsthesia. It has served its turn, and I believe that most plates used so close to the skin as this give trouble eventually.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Stricture of the Œsophagus in Old People.

THERE is one form of œsophageal stricture that has up till now escaped description in the text-books, but which cannot be rare, since Dr. Guisez, of Paris, has succeeded in collecting about 50 cases. This variety is always a result of improper mastication, whether this be due to bolting the food or lack of teeth. It is now proved that the œsophagus takes an active part in deglutition and that if it receives a badly prepared bolus of food it contracts vigorously. These spasms prevent the food passing down and this sets up inflammation of the œsophageal walls, œsophagitis, and consequent inflammatory stenosis. This innocent form of constriction is particularly interesting to recognise because it is usually mistaken for carcinoma of the œsophagus, which it resembles clinically. Œsophagoscopy alone can establish the correct diagnosis. The stenosis is really very serious and leads to complete dysphagia. Once the diagnosis is satisfactorily made, however, it is possible to begin treatment by local dilatation which will abolish the disability.

Pericardotomy.

In a paper addressed to the Société de Chirurgie, Plisson and Rieux advocated more general resort to pericardotomy in cases of sero-fibrinous pericarditis. They presented a case in which grave signs of cardiac collapse required intervention. Operation was done under local anæsthesia, with the patient in a half-sitting position. The incision in the pericardium was flap-shaped. An extensive accumulation of serum and false membrane was evacuated from behind the heart. Marked tachycardia and arrhythmia soon became tranquil. The pericardium was left open, healing was uneventful, and the patient was discharged on the fifteenth day. In some cases secondary infection and prolonged fistula may occur, but this possibility does not contra-indicate the treatment described.

Pathogenesis of Adams-Stokes Syndrome.

It is generally believed that the Adams-Stokes syndrome (slowing of the pulse with attacks of dyspnœa) indicates a lesion of the bundle of His, which forms a liaison between the auricle and ventricle. Dr. Géraudel, of Paris, however, has studied a case of Adams-Stokes disease and has made a series of 1200 thick sections, each of seven-thousandths of a millimetre, without finding any lesion whatever in the bundle of His. A complete investigation of the arterial supply of the heart has, on the other hand, led him to conclusions which support a theory which he had previously formed. From the results of other research he had, in fact, come to the opinion that the auricle and ventricle contract independently. Each chamber of the heart is controlled by a specific structure, which forms a kind of connexion or motor centre (plaque motrice) placed between the nervous system and the heart muscle. There is one motor centre for the auricle (the sino-auricular node or node of Keith and Flack) and one for the ventricle (the node of Tawara, bundle of His, or network of Purkinje). Each centre is supplied by an end artery. The activity of the centre, and in consequence the rhythm of the corresponding chamber of the heart, is a function of the quantity of blood passing through the artery; thus an increase in the supply produces a rapid beat and a decrease produces slowing. The slow ventricular rhythm of the Adams-Stokes syndrome is a result, then, of some obstruction at the level of the artery supplying the auriculo-ventricular node. Working on this original hypothesis, Dr. Géraudel looked for the obstruction and found it. Immediately above the point where the artery running to the auriculo-ventricular node branched off the artery to the septum showed a patch of endarteritis which considerably narrowed the lumen of the vessel. The discord of rhythm in Adams-Stokes syndrome is not, therefore, due to a dissociation between the auricle and ventricle along the connecting band which the bundle of His is supposed to form. The auricle is never directly associated with the ventricle. The difference in rhythms is a result of unequal blood-supply to the motor centres; when the blood-supply to the auriculo-ventricular node is reduced the rate of beat of the ventricle becomes slower.

Pyrenean Wool in Orthopædics.

At the Faculté de Bordeaux Pyrenean wool has been in use for 25 years as a padding for splints and other orthopædic apparatus, serving thus instead of the usual jersey or tricot material. The Pyrenean material is not displaceable, forms no folds, and does not wrinkle. Both the local profession and visiting surgeons find it of great excellence.

Courses at the Hôpital Cochin.

At the official opening of his clinical course at the Hôpital Cochin Prof. Widal, discussing bronchial dilatation, paid a most eloquent tribute to Laënnec, "the father of French clinicians," whose four cases, he said, practically covered the subject, save for the modern laboratory methods which now serve but to confirm his views. On Jan. 11th two complementary medical courses will begin at the medical clinic of this hospital. The first will deal with nitrogenous retention, urea of the blood and urine, determination of the Ambard constant, hypertensive states, retention of chlorides, diagnostic technique in diabetes, and thorough discussion of the examination of the cerebro-spinal fluid. The second course will be devoted to hepatic affections and their diagnosis, duodenal tubage, digestive hæmoclasis, diagnostic technique in the several typhoid diseases, fixation, flocculation and skin reactions, cyto-diagnosis in pleural effusion, and the technique of basal metabolism. The lectures and demonstrations will be held at 2 P.M. daily and will continue until Feb. 3rd. A fee of 100 francs is asked for each course.

Prof. Marchoux, of the Pasteur Institute, well known for his contributions on fowl spirillosis, yellow fever, leprosy, malaria, and other subjects in tropical, colonial, and maritime medicine, was elected member of the Académie de Médecine on Dec. 22nd.

By presidential decree, Profs. de Lapersonne, Hutinel, Pierre Marie, Charles Richet, Letulle, Chauffard, and Weiss have been named honorary professors at the Faculté de Médecine.

The Paris municipal council has fixed new fees for hospital service in 1926. The daily fee for medical service will be 23 francs 32 centimes and for surgical and obstetrical service 24 francs 26 centimes. For hospitalisation of occupational accidents medical service will cost 30 francs 30 centimes, and surgical service 31 francs 53 centimes per day.

The Seine General Council has just taken up the question of securing a sufficient supply of convalescent serum for prophylactic use against measles. Thus far the supply of such serum has been limited to one or two hospitals where Debré and his associates have been active, and extension of the benefits obtained by using serum from convalescent cases of measles has been greatly desired for some time.

STAFFORDSHIRE GENERAL INFIRMARY: NEW OPERATING THEATRE.—A new operating theatre, which has been provided at a cost of about £5000, was recently opened by Sir John Bland-Sutton. In his opening address he reviewed the progress of surgery from pre-anæsthetic days, when strong assistants held the patient, to the present time, and remarked on the advantages which resulted from the harmonious working together of the hospital board of management and the surgeons. From this combination three things followed—namely, security for the patient, welfare for the community, and honour for the institution. The new building has been erected on the west side of the infirmary, with a northern light, and the accommodation includes a small theatre for septic cases, an anæsthetic room, and a preparation room. The equipment is of the most modern character. The Earl of Lichfield, president of the infirmary, presided, and members of the medical and surgical staff of the infirmary were present with their wives.

The Services.

PROMOTIONS OF MEDICAL OFFICERS.

THE following list of half-yearly promotions was issued with the New Year Honours on Jan. 1st:—

Royal Naval Medical Service.—Surg. Comdr. R. W. B. Hall to be Surg. Capt., and Surg. Lt.-Comdr. A. E. W. Hird (Royal Naval Volunteer Reserve) to be Surg. Comdr.

Royal Air Force.—Squadron Leader F. C. Cowtan to be Wing Comdr., and Flight Lts. G. S. Ware, E. F. N. Currey, C. A. Meaden, and F. E. Wilson to be hon. Squadron Leaders.

ROYAL ARMY MEDICAL CORPS.

Cols. L. F. Smith and H. O. B. Browne-Mason, late R.A.M.C., retire on retd. pay.

Lt.-Col. and Bt.-Col. W. R. Blackwell, from R.A.M.C., to be Col., vice Col. H. O. B. Browne-Mason.

Lt.-Col. G. G. Delap, from R.A.M.C., to be Col., vice Col. L. F. Smith.

The undermentioned Majs. to be Lt.-Cols.: D. Ahern, vice Lt.-Col. and Bt. Col. W. R. Blackwell, and B. H. V. Dunbar, vice Lt.-Col. G. G. Delap.

Capt. J. W. Hyatt is secd. for duty with the Sudan Def. Force.

Capt. J. Crean to be Temp. Capt. and temporarily relinquishes the rank of Capt.

Temp. Capt. G. L. K. Finlay relinquishes his commn. on account of ill-health and is granted the rank of Capt.

RESERVE OF OFFICERS.

Lt. A. H. Levers, from Welch R., R.A.R. of O., to be Lt.

MILITIA.

Capt. T. O. Graham to be Maj.

TERRITORIAL ARMY.

R. Riley and G. B. W. Walker to be Lts.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. J. L. Marjoribanks.

Capt. J. W. Van Reenan to be Maj.

Rochiram Udhamdas Hingorani, Janardan Madhav Gole, and Cheruvari Kottieth Lakshmanan to be Temp. Lts.

DEATHS IN THE SERVICES.

Surgeon Rear-Admiral John C. Birkmyre Maclean, C.B. (retd.), who died on Christmas Day at his residence, 12, Penlee-gardens, Devonport, at the age of 76, was the son of the Rev. A. Maclean, D.D. Born in 1849, he received his education at Aberdeen University, where he graduated in medicine and surgery in 1871. He entered the Royal Navy as a surgeon in the following year and served for ten years as surgeon of the *Alexandra*. He was at the bombardment of Alexandria (specially promoted to staff-surgeon, Egyptian medal, with Alexandria clasp, and the Khedive's bronze star). He became fleet-surgeon in 1890, deputy inspector-general in 1898, and inspector-general of hospitals and fleets in 1903. For three years he was in charge of the Royal Hospital at Stonehouse, Plymouth, and retired in 1907. On the outbreak of the war, being then 63 years of age, he returned to duty and was appointed to the *Vivid* at Devonport, for the Naval Transport Service, and in January, 1917, he was gazetted a C.B. He was made a surgeon rear-admiral on the grant of military titles to the branch in 1918. He married, in 1892, Maude, eldest daughter of Mr. E. Hewlett, of the Priory, Totnes, who survives him with one son.

INTERNATIONAL MEDICAL CRUISE IN THE EAST.—Owing to the success of its last cruise the *Bruxelles Médical* has decided to charter a 12,000-ton steamer for another voyage at reduced rates for doctors and their families. The rates for medical men, it is announced, are: First class, 8185; second class, 8120; third class, at greatly reduced rates. The third class is intended for medical students who will be accommodated in six- to eight-berth cabins but will partake in the life on board of the first-class passengers (though not of their meals). The steamer will leave Marseilles on March 17th and will return on April 13th. She will visit Naples, Malta, Piræus, Constantinople, Smyrna, Rhodes, Cyprus, Beirout, Jaffa, and Alexandria. Easter Sunday may be spent in Jerusalem. Applications should be sent at once to Dr. Bernard, 62, Rue Froissard, Brussels.

Correspondence.

"Audi alteram partem."

THE EXTRINSIC ORIGIN OF CANCER.

To the Editor of THE LANCET.

SIR,—I should like to convey to Dr. William B. Coley my appreciation of the kind and generous way in which he has commented on our work in your issue of Dec. 26th last. In his words may be read the spirit of the real investigator—one who is ready to welcome the truth wheresoever and by whomsoever it may be found. Dr. Coley's own splendid record of endeavour in the treatment of malignant disease makes his words the more graceful. I gladly accept the opportunity offered by his letter of trying to clear away some misconceptions that appear to exist in regard to our work.

In two of the addresses[1] on the subject that I have delivered in the last two years I have endeavoured to present a simple yet complete summarised account of our views and of our investigations as they have progressed. On going through these papers I cannot find any omission of importance, or anything that should not be clear to those wishing to repeat our work. As a matter of fact, it would be possible to dispel all the misunderstandings that have arisen by direct quotations from the text of our published papers. Presumably, however, these have been read, though the details have not been completely grasped; consequently detached statements seem now to be required in order to make certain points clear.

First, Dr. Coley and I are not so far apart in certain views as he appears to think. He implies that I rule out bacteria in the ætiology of cancer; this is far from being the case. The essential principle in our working hypothesis is that many extrinsic causes—infective agents, chemical substances, X rays, and the rest—as well as intrinsic factors, such as senescence, *are all capable of producing a common condition of lowered vitality in the cell*, as the result of which malignant neoplasia may develop (vide infra). From this it will be clear that I have not for a moment myself "ignored or cast aside" the work of those who have attempted to assign to cancer a bacterial origin; I have merely stated that this is only one of many so-called "causes." I say "so-called causes" because, in my opinion, they are predisposing factors rather than actual causes in that these numerous agents can all produce a certain precancerous condition in the cell, which may or may not go on to cancerous development. It is possible that Dr. Coley has in his mind the further change from the common precancerous condition mentioned to malignant neoplasia as intrinsic; and, of course, it must be, and is. But this is a stage further than that produced by the predisposing factors, and there need be no reason for confusion. This explanation should dispose of the idea that I believe intrinsic factors alone are concerned in the onset of cancer.

Secondly, however plainly I have endeavoured to expound our working hypothesis, it does not appear to be generally understood. As stated in my last address, there can be no doubt that whatever the predisposing causes—the causes that lead to the common precancerous condition in the cell—the malignant neoplasia that may supervene is a *reversionary, and therefore specific, growth process* in whatever tissue it may arise. In these circumstances it has been essential to look back upon the beginning of growth in mammals—an interesting study in relation to cancer. Here was seen at once evidence of a normal malignant process—the invasive nutriment-seeking faculty of the trophoblast. This was considered alongside the following facts: first, as malignant neoplasia develops in any situation there is an increasing tendency of the cells to revert to the type

[1] THE LANCET, 1924, i., 267; idem, 1925, ii., 1003.

seen in the earlier stages of development of the tissue concerned—a going back, as it were, to the trophoblastic type with all its powers of invasion and destruction; and, second, in chorion epithelioma alone is the malignant tissue an exact, and unvarying, reproduction of the tissue from which it has arisen—a tissue normally malignant and the most primitive in type. This retrogression on the part of somatic cells would be impossible if the cells were not free of differentiation-control; consequently long before reaching the trophoblastic phase they exhibit all the potentialities of it. I need not refer to the body of evidence in support of this view.

So with the third misunderstanding, the last with which I propose here to deal, Dr. Coley compares lead with copper, and implies that the mode of action of the two in regard to cancer is similar, but more pronounced in the case of lead. It is not surprising, then, that many who do not read very carefully say, "Oh, yes, lead—another metal," as though we had simply tried and used lead because it is a metal. These critics also appear to think that there is a special virtue in heavy metals. Now I have repeatedly made it clear, or have tried to do so, that lead has been employed simply and solely because it has a definite effect on the chorionic epithelium in particular, and on growth generally—an effect which differs from that of the other metals tested, even though heavier than lead. The investigations, based on the working hypothesis described, had been in progress a considerable time before the use of lead was contemplated; and then only because the biological substance, probably fœtal, that normally checks the growth of the chorionic epithelium could not be isolated, as we still hope it may be. In other words, lead is only a substitute, and probably a poor one, for the biological inhibitor of the growth of the chorionic epithelium that eventually may be found. In spite of what Dr. Coley says, the fact that lead appears to have a similar effect on malignant cells supports rather than disproves my views as to the mechanism of malignant neoplasia, even without the backing, which exists, of a body of other evidence.

How willingly we all must echo the sentiments contained in the last paragraph of Dr. Coley's letter! Yet, at the same time, with so much evidence, not only scientific but also that of the history of cancer research, against the solution of the problem on the hypothesis of a specific cause, surely it is not unwise to open up another line of attack as we have done.

I am, Sir, yours faithfully,

Liverpool, Jan. 2nd, 1926. W. BLAIR BELL.

To the Editor of THE LANCET.

SIR,—With the argument of your distinguished correspondent, Dr. William B. Coley, of New York (Dec. 26th, p. 1358), many must agree. Even those who cannot concur in Prof. Blair Bell's views on the nature of cancer must acknowledge the significance and value of the curative results which he and his colleagues have obtained with colloidal lead. With Glover and Scott of America they share the credit of having opened out to us new and proved methods of treating cancer. Scott has recently [1] reported 11 cases of cancer where tumour masses have disappeared and ulcerated surfaces have healed under the exhibition of the serum of horses immunised against the pleomorphic microbe described independently by Glover and myself. These striking results constitute, in my opinion, the most significant contribution to the non-surgical treatment of cancer so far published. Scott had previously confirmed our view by isolating the Young-Glover microbe from all classes of cancer and with it producing malignant epithelial tumours in animals at the point of inoculation.[2] Loudon and McCormack,[3] of Toronto, have published similar confirmatory results and, within the past few days, in a personal letter I have received further confirmation from another American laboratory. In addition, Nuzum has recently produced a diffuse lymphomatous lesion in mice by the inoculation of the pleomorphic microbe which he obtains regularly from carcinoma, and has thus confirmed my experimental findings (1922) and added support to the view which I have urged that this "pseudo-leukæmic" lesion is in reality a diffuse malignancy. Maud Slye's experimental investigations, pursued from an entirely different angle, point to the same result. I have elsewhere shown how these findings throw a flood of light on the whole leukæmic process and have led to the discovery in the leucocytes in human leukæmia of a pleomorphic microbe similar to that previously found in the cancer cell.[4]

This multiple confirmation of the pleomorphism of the cancer parasite must lead speedily to a coördination of much effort which is at present scattered and apparently contradictory. Already its fruit is seen in a new and hopeful therapeutic measure. It is obvious that Nuzum's micrococcus is identical with the micrococcal variant of the cancer microbe which I described in 1921, and it follows, also, that the bacillus with which Blumenthal in Berlin (1924) has obtained positive experimental results, which have been confirmed elsewhere, and that the ultramicroscopic form which Blumenthal has found it necessary to predicate and which Gye and Barnard recently claim to have cultivated and photographed, are all identical with the corresponding forms of the microbe which I described in 1921. The sooner we face these issues squarely the sooner shall we be equipped for the tasks that lie ahead. A host of workers have shown that a pleomorphism similar to that of the cancer parasite is possessed by other micro-organisms which, like it, can each live an independent existence as coccus or bacillus, or filterable virus, &c. In the hands of Calmette and his co-workers the pleomorphism of the *B. tuberculosis* is leading to unexpected results; others have shown that the *Rickettsia prowazeki* and the *B. proteus* (X 19) of typhus are variables of one and the same microbe, and so on, and to those who are in touch with these big new developments it must seem likely that pleomorphism is behind the bacterial chaos of influenza, small-pox, measles, &c.

I am, Sir, yours faithfully,

Edinburgh, Dec. 31st, 1925. JAMES YOUNG.

[1] Northwest Medicine, October, 1925.
[2] Ibid., April, 1925.
[3] Can. Lancet and Practitioner, November, 1925.
[4] Edin. Med. Jour., 1922.

THYROID GLAND AND CALCIUM THERAPY.

To the Editor of THE LANCET.

SIR,—In text-books one finds thyroid gland very generally recommended for the treatment of chilblains. In my opinion any benefit derived is from the contained parathyroid, and in my experience the administration of thyroid often causes chilblains where they have not previously existed. At the present moment I have two patients, middle-aged women, under treatment by small doses of thyroid (gr. i. fresh gland daily) for slight though quite definite symptoms of myxœdema, which are relieved by taking this dose, but quickly recur on its intermission. They both tell me that since taking thyroid they have suffered considerably from chilblains, although before taking it they were immune to the trouble since the days of childhood. In both cases, while admitting other positive benefits, they blame the thyroid for the chilblains, and I think they are right. There is no other altered circumstance in their lives which might account for the chilblains. They have both taken thyroid fairly regularly for two years and have suffered from chilblains this winter and last. One of them took no thyroid September, 1924–February, 1925, and did not begin her chilblains till March, 1925. Both cases are relieved by taking calcium lactate.

Sir James Barr [1] holds that in chilblains the fixed line in the circulation is not diminished, so that there is no true œdema but the free calcium ions are diminished. Since thyroid secretion has the effect of

[1] Barr: Brit. Med. Jour., Sept. 24th, 1910.

increasing the calcium metabolism and the excretion of calcium, one would expect an excessive dose to produce symptoms of deficient calcium in the blood. My patients, however, are taking only just sufficient thyroid to keep the myxœdematous symptoms in check. The calcium content of the blood is said [2] to be diminished in both hyper- and hypo-thyroid states, but I have not known a case of Graves's disease with chilblains. I imagine this is due to the good peripheral circulation and the fact that the parathyroids are also over-functioning. I have also a case of pituitary tumour, taking thyroid gland, gr. v.–x., daily in the hopes of influencing the growth of the tumour. She does not suffer from chilblains or show other signs of calcium deficiency (metrorrhagia, &c.), but in her case the parathyroids are in all probability fully functional.

As cases of myxœdema (not those following thyroid extirpation where the parathyroids are left) are probably suffering from atrophy of both thyroid and parathyroid, and since the modern preparations of thyroid gland contain little or no parathyroid, it seems rational that these patients should be treated with preparations of both glands. Probably any good results in the past obtained from giving thyroid in chilblains were due to the contained parathyroid, which, I understand from the makers, is now very generally extracted.

I am, Sir, yours faithfully,

Walmer, Dec. 30th, 1925. D. C. NASMYTH.

PSYCHO-ANALYSIS AND SUICIDE.

To the Editor of THE LANCET.

SIR,—One hears occasionally of suicide being ascribed to psycho-analysis, but a recent case appears to be the first in which the assertion can be examined. In the *Times* of Dec. 29th is the report of an inquest at which a medical witness said the patient had been taken to a psycho-analyst, "but the treatment proved too great a strain and the damage was intensified and produced a morbid condition of introspection and, through laying bare his subconscious mind, injured his mind very greatly, and he had to give up the treatment." Also, "the cause of the condition to which he arrived was the psycho-analysis." There were references to analysis as a "dangerous weapon."

I am a physician and use whatever means I consider suitable to the individual case. This gentleman came to me, with his father, on Nov. 16th. My notes of the interview record his physical condition and a few symptoms. I told his father that I did not consider analysis was desirable, but suggested that he should come to me for a few talks concerning his troubles. He came again on Dec. 7th. My notes show that nothing of importance cropped up. On the 9th he talked spontaneously of fairly recent events to which he gave an exaggerated emotional value that I sought to minimise. On the 10th he said that his father was not in favour of further treatment. We discussed how he ought to look at his troubles and handle them in the light of his own temperament, and he parted from me with no indication that the talks had been regarded as other than helpful.

In an analysis many days are spent in going over the patient's ordinary life before analysis proper can begin. The brevity of the treatment in this case is sufficient indication that no analysis was done, and, as I have shown above, none was attempted. These facts speak for themselves, and, apart from them, I will ask your readers to judge the conduct of the medical witness by the ordinary standards of professional conduct as applied to any specialty where psychological questions do not arise.

I am, Sir, yours faithfully,

MILLAIS CULPIN.

Queen Anne-street, W., Jan. 1st, 1926.

*** Comment on Dr. Culpin's letter will be found on p. 79 under the heading of Medicine and the Law. —ED. L.

[2] Hall: Medical World, Nov. 27th, 1925.

GLYCOSURIA AND LIFE ASSURANCE.

To the Editor of THE LANCET.

SIR,—Will you, in justice to the assurance company and myself, allow me a brief reply to their statement and your comment thereon? The account given me by the proposer of the method of testing the urine is evidently not correct, but he would not necessarily know that a portion of the specimen had been reserved for further examination. The presence of glycosuria was, however, never in doubt and is admitted. My point was that this was used as a ground for rejection at that time, without examination of the blood, and that when the assurance company were informed of the result of the analysis they refused to modify their attitude. I now have the letters of the company to the proposer before me, and there can be no doubt on that point. My main contention, therefore, remains unchallenged, which is that with so small a quantity of sugar in the urine no estimate should be formed of the significance of glycosuria without examination of the blood.

I am, Sir, yours faithfully,

A. KNYVETT GORDON.

Bedford-square, W.C., Jan. 1st, 1926.

PROFESSIONAL CRITICISM OF THE GENERAL MEDICAL COUNCIL.

To the Editor of THE LANCET.

SIR,—Dr. Layton gives your readers to suppose that, when writing in your issue of Dec. 26th last (p. 1359) on the General Medical Council and professional standards, I "openly state" that I am in the habit of signing false statements. I regret that my letter could have been so misread. May I say that I am not in the habit of signing such statements, although I pointed out the difficulty in which the practitioner is placed, and expressed a hope that the Council should distinguish between technical inaccuracy and fraud or carelessness.

I am, Sir, yours faithfully,

Sevenoaks, Kent, Jan. 3rd, 1926. GORDON WARD.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 26TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 178 (last week 180); scarlet fever, 1546; diphtheria, 847; enteric fever, 21; pneumonia, 1329 (last week 1832); puerperal fever, 34; cerebro-spinal fever, 5; acute poliomyelitis, 7; encephalitis lethargica, 34; dysentery, 7; ophthalmia neonatorum, 86. The holiday season no doubt explains the fact that with the single exception of dysentery the number of cases reported is smaller for every notifiable disease this week than it was in the previous week. There were no cases of cholera, plague, or typhus notified during the week.

Of the 178 cases of small-pox, 106 were reported from the county of Durham, 39 from the county of Derby, and 14 from the county of Nottingham.

Deaths.—In the aggregate of great towns, including London, there was only 1 death from enteric fever, none from small-pox, 72 from measles, 11 from scarlet fever, 36 from whooping-cough, 36 from diphtheria, and 85 (last week 132) from influenza. In London itself there were 37 deaths from measles, 10 from diphtheria, 21 from diarrhœa and enteritis under two years, and 14 from influenza.

BRITISH CHARITIES ASSOCIATION.—The second annual report, to July, 1925, states that grants have been made to every approved voluntary hospital which applied, and also to those hospitals which coöperated with the British Charities Association during the year. A sum of £19,848 was distributed to hospitals in London, £15,000 of which was handed to King Edward's Hospital Fund, and £10,909 to hospitals and charities outside the London area. At Christmas a supplementary distribution of £20,000 was made to King Edward's Hospital Fund for the London hospitals, and £45,000 to the various hospitals outside the London area, bringing the total since midsummer, 1924, to over £95,000. During the two and a half years since its foundation the British Charities Association has distributed a net total of £121,000.

Obituary.

LOUISA BRANDRETH ALDRICH-BLAKE, D.B.E., M.D., M.S. LOND.

WE have already briefly announced the death on Dec. 28th last of Dame Louisa Aldrich-Blake, whose memory will live as a great leader, a wise administrator, and a brilliant surgeon.

Louisa Brandreth Aldrich-Blake was born at Chingford Rectory on August 5th, 1865, the daughter of the Rev. Frederic James Aldrich-Blake, sometime rector of Welsh Bicknor, her forbears including a number of Aldrichs holding distinguished positions in the navy. She was by birth and character of the stuff of the great leaders of English conservative tradition. A landowner herself, she came to understand the duties of administration, sharing the responsibilities of her tenants and loving the soil of her native county. It is recorded of her that she had a natural gift for healing, and that at the age of 8 she and her sisters organised an animal hospital to which the villagers brought their sick and wounded pets and that at 10 years she had performed her first operation on one of them. No doctor was immediately available in the village, and when she was not much older she undertook more serious duties and set a broken leg before the patient was taken away to hospital. Louisa Aldrich-Blake was sent first to a private school at Malvern and afterwards to the Ladies College at Cheltenham, from which she took the preliminary scientific examination of London University. Entering the London (R.F.H.) School of Medicine for Women in October, 1887, she graduated in medicine five years later with first-class honours in medicine and obstetrics, again taking first-class honours and qualifying for the gold medal in the B.S. examination of the following year. In the two succeeding years she went on to take the higher diplomas in medicine and surgery offered by London University, being the first woman to obtain the M.S. degree. It was in this year that she was appointed assistant surgeon to the New Hospital for Women (later renamed the Elizabeth Garrett Anderson Hospital), becoming full surgeon in 1902 and senior surgeon in 1910. At the Royal Free Hospital she was the first woman to hold the post of surgical registrar, and was for several years anæsthetist and lecturer on anæsthetics. Soon after the outbreak of war in 1914 she was invited to become consulting surgeon with charge of beds at this hospital. At about the same time she organised a group of medical women who were prepared to establish a hospital at Brussels, but, being prevented from so doing organised a unit near Cherbourg at which many Belgian and French sick and wounded were treated. In the autumn of the following year she served under the Anglo-French Red Cross at Royaumont, assisting Miss Frances Ivens and relieving her of a large part of the many operations performed there. During 1916 her work at the Royal Free Hospital included charge of surgical out-patients on two afternoons a week, and gradually her mornings were devoted to work in the theatre and surgical wards, where she replaced members of the staff who had gone on foreign service. During this period she acted as visiting surgeon to the W.A.A.C. Hospital at Isleworth.

DAME LOUISA ALDRICH-BLAKE.

For 20 years Miss Aldrich-Blake had been intimately associated with the administration of the London School of Medicine for Women. She was appointed vice-dean to Miss J. Cock in February, 1906, and succeeded her as dean in February, 1914. Dr. May Thorne who, as honorary secretary of the school, worked with her for 17 years, speaks of her as a wise administrator whose mind was orderly and whose life was arranged for the proper discharge of manifold duties. "Dame Louisa," Miss Thorne writes, "gave everyone the impression that she had ample leisure, for she never hurried, and this in spite of the fact that for many years she worked every night well into the morning hours. She had an extraordinary power of undertaking and performing an enormous amount of good work which was of far-reaching usefulness not only for the school, the Elizabeth Garrett Anderson Hospital, the Royal Free Hospital, the Canning Town Settlement, and many medical societies, but also for numerous individual students and medical women. She loved what was good and true. The things that made her justly angry were carelessness, leakage of work done at committees, and tale-bearing. She often took time to master some problem that arose in the course of her work as dean, but, once grasped, she never forgot any detail of it, even after a lapse of years. No doubt a larger gift of revealing the sympathy that was in her would have made her more widely understood, but to the hundreds of students who passed through the school her unfailing readiness to bear their burdens, her calm mind, self-forgetfulness, and steadfastness, will remain an inspiration."

Miss Aldrich-Blake was a surgeon of excellent judgment. "From the outset of her medical career," writes Miss Elizabeth Bolton, "she realised the need of long and thorough training for operative work, and how much more was involved in the making of a surgeon than mere manipulative skill. She grasped the supreme importance of anatomy and physiology as a groundwork for surgical work, she had unusual mechanical knowledge and joy in the right use of instruments, her technique was sound, and she ever remembered the sensitiveness of living tissue. To any difficult problem she would give much thought, and, what is perhaps more rare, thought after as well as before action. Her judgment was direct and clear and she had developed unusual keenness of diagnosis.

"Miss Aldrich-Blake was one of the first in this country to undertake Wertheim's operation for carcinoma of the cervix, and in 1903 she brought forward the advantages of abdomino-peritoneal resection of the rectum. She got through an enormous amount of work in later years, but, with it all, she never failed to find time to help at once any of her junior colleagues who needed her. To her nothing was trivial. The small operation as well as the big was intensely interesting and had its claims, and she paid them in full. The personal side of the patient under her care interested her, and she impressed on those under her the insult of daring to deal with patients with only half one's attention. She was, in fact, a great

craftsman in the work she specially made her own, and to the end she was a student."

But while herself so sure and good a surgeon, she was determined that others should be so too. "It was characteristic of her," writes Miss L. Martindale, "that no one ever applied to her for help in vain. Women in the past had few opportunities for posts as assistant surgeons. Dame Louisa Aldrich-Blake helped many of them in their early days, and there are many women surgeons now holding important positions and doing brilliant surgery who owe their successful careers to her. A telephone call and a conversation always brought her to their aid. Many is the time she has assisted young surgeons in their first operations on private patients, travelling often at night without thought of personal recognition."

No account of Miss Aldrich-Blake would be complete without some mention of the qualities of heart and mind which made her so much more than a wise administrator and a skilful surgeon. She was first and foremost sincere, upright, and of unswerving principle in the face of difficult problems, confident in herself and yet unusually silent and reticent as to her achievements. She once said she wished human life were longer; there were so many things she would like to do. Her fine brain, judgment, and devotion to work would have ensured success in any field. Lord Riddell, chairman of the Royal Free Hospital, has said truly that had she not been an eminent surgeon she might well have made a distinguished judge, for she had the habit of mind of dealing with every subject on its merits irrespective of her personal interests. Apart from her medical work she was fond of travel, and was interested in every kind of sport. Although not a great reader, she had a freshness in her judgment of political situations which was stimulating to others. Children she loved and instinctively they loved and trusted her. Family relationships meant much to her; that of aunt and nephew, she once said, was one of the most satisfactory in the world.

It was at the jubilee last year of the London School of Medicine for Women that Miss Aldrich-Blake's work was recognised by her appointment as a Dame of the Order of the British Empire, and there has never been an honour granted which was felt to be more appropriate or has been given wider approval.

RICHARD CATON, C.B.E., LL.D., M.D. EDIN., F.R.C.P. LOND.

AFTER a long and distinguished career in Liverpool, Dr. Richard Caton died at Haslemere, Surrey, on Jan. 2nd.

Richard Caton was born at Bradford, and was educated at Scarborough Grammar School and Edinburgh University, where he qualified as M.B., C.M. in 1867. Three years later he gained the gold medal for his M.D. thesis on the migration of leucocytes, and in 1888 was elected F.R.C.P. Lond., becoming a member of the Council, and Harveian lecturer to the College in 1904. It was in the year following qualification that he settled at Liverpool, where from the first he was prominently associated with religious and civic activities. His professional reputation grew rapidly. At first he worked at the old medical school attached to University College; later he was foremost in the movement which ultimately secured university status for Liverpool. To the end his interest in the University was living and effective. At one time professor of physiology, he succeeded to the office of pro-Chancellor, and in this capacity represented Liverpool at the seventh centenary of the University of Padua. Nor were his civic attainments negligible. As a scientist he was greatly interested in physiology in its relation to the health of the people, and his knowledge of public health made him a most useful member of the City Council and especially of those committees which dealt with secondary education and the housing of the poor. Of these committees he was chairman. His commanding position was recognised when, in 1906, he was elected Lord Mayor. Dr. Caton was physician to several Liverpool hospitals, including the David Lewis Northern Hospital and the Royal Infirmary. He was president of the Medical Institution in 1896–97, and was vice-president of the Liverpool School of Tropical Medicine. Interested in various medical subjects, and especially in early endocarditis, for which he recommended blistering ("Caton's blisters"), he was at the same time a keen classical archæologist, and will be remembered for his writings on Hippocrates, Asklepios, and the Medicine God of the Egyptians. His learning was recognised by three universities, Edinburgh, Padua, and Liverpool, which conferred on him the degree of LL.D., and he was created a C.B.E. in recognition of his work as chairman of the West Lancashire Nursing Service Committee.

"Dr. Caton," writes a correspondent, "never spoke without one feeling the vivid and forceful personality behind his words. He was a revered and commanding figure in every circle where he was known, and Liverpool, no less than Liverpool's medical profession, mourns his loss as that of one of her great men."

Dr. Caton married the daughter of Mr. William Ivory, of St. Roque, Edinburgh, and had two daughters, one of whom is married to Prof. H. A. Ormerod, of the University of Leeds.

AGNES ELIZABETH HENDERSON, M.B.E., M.D. BRUX., L.R.C.P. EDIN.

Dr. Agnes Henderson, whose death occurred in a London nursing home on Dec. 29th last, was one of the senior missionaries of the United Free Church of Scotland. Daughter of the late Sir William Henderson, LL.D., who was Lord Provost of Aberdeen from 1886 to 1889, and grand-daughter of Mr. George Thompson, M.P., she studied at the London School of Medicine for Women, taking the triple Scottish diploma in 1889 and the Brussels M.D. for practitioners in the following year. She went out to India in 1890, and for 32 years worked unremittingly among the women in the Central Provinces, where she was in charge of the hospital at Nagpur. Even though she went on the retired list in 1922, she continued to live in Nagpur, and busied herself with the responsibility of raising funds from among her Indian friends for a new hospital building. The municipality also came generously to her assistance. During the war years Miss Henderson spent some time in this country as a medical officer among women and girls in munition factories. In 1923 she was made a Member of the Order of the British Empire. She returned to England early last summer and was living quietly in Buckinghamshire.

JAMES MURIE, M.D. GLASG., LL.D. ST. AND.

AT the age of 93 Dr. James Murie died at Rochford, Essex, on Dec. 21st, having outlived all his relatives.

James Murie was born at Glasgow and studied natural history and medicine at the University, where he took his M.D. degree in 1857. The buildings of the University now stand on land which his father used to farm. Dr. Murie started his adventurous career by going to West Africa to report on mercantile products. Upon his return he became pathologist at the Glasgow Royal Infirmary, and after a few years of desultory teaching, during which he was looking out for another opportunity to go to Africa, made the acquaintance of David Livingstone, J. H. Speke, and other famous travellers, and was appointed medical officer and naturalist to an expedition led by John Petherick, which was to convey stores to Gondokoro, to meet Speke and Grant, who were investigating the source of the Nile. Dr. Murie succeeded on this expedition in making important collections of animals and plants; the fauna and flora of the Sudan was at that time little known. On coming back to England it was his wish to accompany Livingstone on his Zambesi venture, but the appointment went to Dr. (afterwards Sir) John Kirk. In 1865 Murie was made prosector to the Zoological Society, in which occupation he remained for six

years. In 1868 he had been elected a Fellow of the Linnean Society of London, and in 1876 he became assistant secretary. He resumed his medical work, and was at one time lecturer on comparative anatomy at Middlesex Hospital and physician to the Bethnal Green Asylum. In 1877 he received the degree of LL.D. from the University of St. Andrews. After succeeding to the post of librarian of the Linnean Society, which he held for eight years, he retired in 1888 to Leigh-on-Sea. Since that time he has led a very solitary life, devoting himself to the study of the fish and fisheries of the Thames estuary. He enjoyed a pension from the Linnean Society, but in his later years was able to publish comparatively little work.

REGINALD WOOLSEY STOCKS, M.R.C.S. ENG., D.P.H. BIRM.

DEEP regret is felt in public health circles at the untimely death of Dr. Woolsey Stocks, medical officer of health and school medical officer for West Bromwich. He had already made his name as a keen and progressive member of the service, with a special interest in the welfare of mothers and children. As recently as Dec. 12th we commented on his report in which he urged the need for systematic antenatal examination and pleaded for the expenditure of greater care on the well-being of small children.

Born in London in 1882, Dr. Stocks was educated at Dulwich College, at the Universities of London and Birmingham, and at St. Thomas's Hospital. After house appointments at the Queen's Hospital, Birmingham, he became resident medical officer at the Children's Hospital, Birmingham, in 1909. After this he held public health appointments in Wandsworth, and in 1914 was appointed to West Bromwich. For several years Dr. Stocks was one of the hon. secretaries of the National Baby Week Council, and his advice was invaluable to this voluntary body in its many activities. He also took a very active interest in the work of the maternity and child welfare group of the Society of Medical Officers of Health and was its secretary from its institution till the current year, when he was unanimously appointed president, being also the representative of the group on the council of the parent society. Dr. Stocks was gifted with a charming manner, and was able to put forward his views with energy and decision, without leaving the sting of resentment amongst those who differed from him. He was deservedly popular and the public health service is the poorer for the loss of a man with his high ideals.

DAVID CHARLES LLOYD OWEN, M.D. BIRM., F.R.C.S. IREL.

IN his eighty-second year, Dr. Lloyd Owen, formerly of Birmingham, died at Harlech on Christmas Day. He was descended from an ancient Welsh family deriving its origin from Scissylit, Lord of Ardudwy, in Merionethshire, and was educated at the University of Birmingham and Paris. Qualifying as M.R.C.S. in 1865, he settled in Birmingham, where he specialised as an ophthalmic surgeon, and where, until his retirement a few years ago, he was surgeon to the Birmingham and Midland Eye Hospital and consulting ophthalmic surgeon to the Hospital for Sick Children and the General Hospital. Dr. Owen took considerable interest in public affairs, and became J.P. for the county of Warwick and a Knight of Grace of the Order of St. John of Jerusalem. He was also president of the Midland Medical Society, and of the Ophthalmological Section of the British Medical Association in 1890. These offices represent only a few of his activities, both medical and social, and his contributions to the literature of ophthalmology were considerable. He translated Giraud-Teulon's book on the eye, published "Elements of Ophthalmic Therapeutics" in 1890, and produced numerous lectures and papers, including the Middlemore lecture, on Pain in Eye Disease, of 1896.

JOHN PREST WIGHTMAN, M.R.C.S. ENG.

Dr. J. P. Wightman, who died on Dec. 19th at Newby, Scarborough, after a week's illness, was elder son of the late Charles John Wightman, of Rawdon, Yorks. He was educated at St. Bartholomew's, qualifying in 1891, and after holding resident posts at the Hospital for Children, Myrtle-street, Liverpool, and the Sanatorium for Consumption, Bournemouth, he settled in York, where he built up a large practice in the Mount district, and was appointed honorary medical officer at the York Dispensary. He was an active member of the York Medical Society and the Leeds and West Riding Medico-Chirurgical Society, and made several contributions to medical journals on clinical subjects in which he was specially interested, such as empyema in childhood and hæmophilia. Six years ago Dr. Wightman left York and settled in Scalby, entering into partnership with Dr. B. G. Forman. He leaves a widow and one son, who is a medical student at Cambridge.

Medical News.

UNIVERSITY OF OXFORD.—The following degrees have recently been conferred:—

Doctor of Medicine.—H. M. MacKeith.

Bachelors of Medicine.—C. W. Simpson, L. J. Barford, F. J. Bach, N. Chilton, S. Howard, and V. H. Brink.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the subjects indicated:—

Surgery.—S. Douglas, Univ Coll. Hosp.; E. W. Hayward, Cambridge and London Hosp.; E. Kessel, Westminster Hosp.; B. A. Perott, Petrograd; I. Rivlin, Middlesex Hosp.; P. H. Row, London Hosp.; F. Smith (Sect. II.), Manchester; and J. A. H. Sykes, Edinburgh and Middlesex Hosp.

Medicine.—R. F. Ashkenny, Cambridge and London Hosp.; A. K. A. Carter, Univ. Coll. Hosp.; C. E. Hagenbach, St. George's Hosp.; R. D. Mason, St. Mary's Hosp.; M. Schwartzman, Odessa and Middlesex Hosp.; and F. Smith (Sect. II.), Manchester.

Forensic Medicine.—R. F. Ashkenny, Cambridge and London Hosp.; C. E. Hagenbach, St. George's Hosp.; B. D. Jain, Charing Cross Hosp.; S. A. Jocelson, London Hosp.; E. H. Rampling, St. Thomas's Hosp.; C. H. Spencer, Manchester; and J. M. F. Whitby, St. Thomas's Hosp.

Midwifery.—A. M. El Mishad, Guy's Hosp.; R. C. Glover, Leeds and St. Bart.'s Hosp.; T. A. Lazaro, St. Bart.'s Hosp.; and J. Shibko, Cardiff.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: R. F. Ashkenny, S. Douglas, C. E. Hagenbach, T. A. Lazaro, M. Schwartzman, and F. Smith.

ROYAL SOCIETY OF ARTS.—A lecture by Prof. J. McLean Thompson on Some General Problems of the Transport by Sea and Conservation in Store of Ripe Fruit will be given at the Society's house in John-street, Adelphi, London, W.C., on Wednesday, Jan. 27th, at 8 P.M. On Feb. 10th Prof. J. C. Drummond will lecture on Modern Views of Vitamins, and on Feb. 24th Mrs. Mary Fishenden, of the Fuel Research Board, will give an address on Domestic Heating.

MEDICAL SOCIETY OF LONDON.—The programme for the second half of 1925–26 session is as follows: On Jan. 11th, at 8 P.M., a pathological evening will be held. On the 25th, at 8.30 P.M., a discussion on Manipulative Treatment in Medicine and Surgery will be introduced by Mr. R. C. Elmslie and Mr. W. R. Bristow. On Feb. 8th, at 8.30 P.M., a discussion on Right Iliac Fossa Pain will be introduced by Mr. H. W. Carson, Dr. A. F. Hurst, and Dr. T. W. Eden. On the 22nd, at 8.30 P.M., a discussion on the Ætiology and Diagnosis of Gall-stones will be introduced by Sir Humphry Rolleston, Mr. R. P. Rowlands, and Dr. Robert Knox. On March 8th, at 8.30 P.M., a discussion on Obscure Pyrexia in Adults will be introduced by Sir Thomas Horder, followed by Dr. C. E. Lakin and others. On the 22nd, at 8.30 P.M., a paper on the Use of Lead in the Treatment of Malignant Disease will be read by Prof. Blair Bell, followed by Dr. J. G. Adami, Sir Lenthal Cheatle, and others. On May 10th, at 8 P.M., a general meeting will be held, followed at 9 P.M. by the annual oration to be delivered by Sir Berkeley Moynihan. The Lettsomian Lectures on the Principles of Treatment in Relation to Diseases of the Nervous System will be delivered at 9 P.M. on Feb. 15th, 24th, and March 15th, by Dr. E. Farquhar Buzzard.

THE death is announced of Dr. J. Bryce McMurrich, surgeon on board the Canadian Pacific liner *Melita*. Dr. McMurrich, who was a graduate of Trinity Medical College, Toronto, and was about 50 years of age, died suddenly at Jarrow railway station.

WELFARE CENTRE AT LLANDUDNO.—On a site given by Lord Mostyn a maternity and welfare centre, with accommodation for clinic and welfare work, an operating room, and offices, will be erected. On the upper floor there will be five maternity wards. The centre will form part of the local war memorial.

DUBLIN (83) GENERAL HOSPITAL.—The annual dinner of the Dublin unit of the Dublin (83) General Hospital was held on Jan. 2nd in the Royal College of Surgeons, Dublin. Colonel Sir William Taylor, organiser of the hospital, presided, and of the whole unit of 28, 18 were present. Of the remainder four have died, the most recent death being that of Major A. J. Blayney last July.

THE King has sanctioned promotions and appointments to the Order of the Hospital of St. John of Jerusalem in England amongst the following members of the medical profession: Colonel Sir George Hastings, V.D., and Surgeon-Captain Montague Henry Knapp, R.N., as Knights of Grace; and Lieut.-Colonel Robert Frazer Standage, C.I.E., I.M.S., Captain Hugh Falkenberg Powell, M.B.E., Dr. George Pugin Meldon, Mr. Seton Sidney Pringle, O.B.E., F.R.C.S.I., Dr. Eustace George Carter, O.B.E., Colonel Francis Darlow, R.A.M.C., T.A., and Dr. Russell Facey Wilkinson, M.V.O., as Esquires.

ROYAL PATRONAGE FOR HOSPITALS.—The Queen has consented to become patron of the Elizabeth Garrett Anderson Hospital in place of the late Queen Alexandra. The Duchess of York has consented to become patroness of the British Home and Hospital for Incurables, Streatham, in place of the late Queen Alexandra. Princess Mary Countess Lascelles has accepted the presidency of the Yorkshire Federation for Maternity and Child Welfare in succession to Lady Irwin, wife of the Viceroy-designate of India. Her Royal Highness will fulfil her engagement to open the new Whitehaven and West Cumberland Infirmary at Whitehaven Castle on Jan. 22nd.

BAD SANITARY CONDITIONS IN ELEMENTARY SCHOOLS.—The medical officer to the Billericay Rural District Council has reported on the conditions found in the church and council schools at Wickford. At the council school, which has 169 children on the roll and has accommodation for 170, one room used as a classroom has no cross ventilation and no fireplace, and the heating by means of a radiator is entirely insufficient. There were only two drinking mugs provided and two clean towels were allowed per week for the whole school. At the church school there was a class of 56 children in a room suitable for 30. The heating was inadequate and the walls were damp. The medical officer's reports have been forwarded to the Essex Education Committee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Prince of Wales's General Hospital, Tottenham, N., is holding an intensive course from Jan. 11th to 23rd. It will include daily morning demonstrations of clinical methods, lecture-demonstrations of groups of selected cases in the afternoons, and work in the general and special departments of the hospital. A special feature of the course will be the afternoon lectures at 4.30, free to general practitioners who are members of the N.E. London Post-Graduate College and to members of the Fellowship of Medicine. The opening lecture will be given by Dr. Eric Pritchard on the Principles of Nutrition. Two special Saturday morning demonstrations will be held at the N.E. Fever Hospital and the L.C.C. Mental Hospital. A series of demonstrations in the diagnosis and treatment of the acute infectious diseases will be given by Dr. Frederic Thomson at the N.E. Fever Hospital on Wednesdays at 2.30 P.M. and Saturdays at 11 A.M. from Jan. 13th to 30th. From Jan. 18th to 30th the Queen's Hospital has arranged a special course on diseases of children. Morning and afternoon sessions will be held daily, and the programme consists of lectures and clinical demonstrations on medical and surgical diseases of children, including all the special departments. From Jan. 18th to 29th there will be an all-day course in cardiology at the National Hospital for Diseases of the Heart. The opening lecture of the Fellowship's new series will be delivered by Dr. Herbert Spencer on Abdominal Palpation in Pregnancy (with lantern demonstration). These lectures are free to members of the medical profession. A copy of each syllabus of the foregoing courses and of the programme of the General Course arranged by the Fellowship may be had on application to the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

BECKETT HOSPITAL, BARNSLEY.—This hospital, which was enlarged in 1912, is to be further extended by the addition of a new ward for women and children. Towards the £22,000 which the work will cost, the local Miners Welfare Committee have granted £12,000, on condition that extra provision is made for casualties and out-patients.

NORTH STAFFORDSHIRE MEDICAL SOCIETY.—A clinical meeting will be held at North Staffordshire Royal Infirmary, Stoke-on-Trent, on Jan. 14th, at 3.30 P.M. Practitioners will be admitted on presentation of card. The president for this year is Mr. E. E. Young, and the joint hon. secretaries Dr. A. W. Gill and Dr. E. C. Myott.

THE SHEFFIELD HOSPITALS.—The report of the Sheffield Joint Hospitals Council for 1924 has at last been issued. During the year there were 428,000 attendances of out-patients at the Sheffield hospitals, which spent nearly £1000 a month on milk and coal alone. The "Penny-in-the-Pound" fund produced over £94,000, but the balance owing to the bankers at the end of the year exceeded £91,000.

BRADFORD: NEW INFIRMARY.—The board of management is about to proceed with the erection of a new infirmary which, in addition to the ordinary medical and surgical wards, will have special departments for X ray, electro-therapy, and artificial sunlight. The total cost is estimated at £500,000, and three-fifths of the amount has yet to be raised.

UNUSED Health and Unemployment Insurance stamps of the denominations which were in use up to Jan. 4th, 1926, if they have not been affixed to any material, will be accepted at any Post Office in exchange for Health and Pensions Insurance stamps and Unemployment Insurance stamps of the new values. National Health Insurance stamps will not be accepted in exchange for Unemployment Insurance stamps. These arrangements will remain in force up to Jan. 31st.

NATIONAL MEMORIAL TO QUEEN ALEXANDRA.—The King and Queen have approved the suggestion that the national memorial to Queen Alexandra should take the form of a fund to develop the work of Queen Victoria's Jubilee Institute for Nurses. It is proposed to devote one half of the fund to strengthening and developing the work of the 600 local nursing associations, and a further portion will be allocated to the Nurses' Long Service Fund to provide pensions for Queens' nurses who have served for 21 years.

PSYCHOLOGISTS AND EAST AFRICAN TRIBE.—Dr. C. J. Jung, of Zurich, and Dr. H. Godwin Baynes, of London, have arrived in East Africa with the intention of spending six months amongst the Bagishu on Mount Elgon. These people are a mixture of the Bantu and Nilotic races and possess an extensive mythology. By investigating their customs and beliefs Dr. Jung and Dr. Baynes hope to throw light on the subject of the existence of the primitive in all men, whether civilised or not. Unfortunately the work will have to be done through interpreters.

BIDDULPH ORTHOPÆDIC HOSPITAL.—The trustees of this North Staffordshire hospital have accepted an offer from the Lancashire County Council to purchase the hospital and estate. The hospital, which was given by Mr. Robert Heath on condition that it should always be used for orthopædic work, was opened by the Prince of Wales in June, 1924, but in less than 12 months it had to be closed owing to lack of public support and the heavy cost of equipment, adaptation, and maintenance. Staffordshire now has no means of dealing with the majority of the waiting orthopædic cases, which are said to be very numerous.

SMALL-POX IN DURHAM AND RAWMARSH.—During the last quarter 630 cases were notified in Durham county in the administrative country area, and 45 in the county boroughs. In the administrative county of Durham during the four weeks of December the number of cases has been 80, 83, 110, and 90 respectively. In some districts in Durham county only about 30 per cent. of the children are vaccinated. Every hospital in the affected area is full. Durham County Health Committee has been obliged to send 50 cases of tuberculosis home in order to free hospitals at Birtley and Scalburn for small-pox, and both hospitals are now full. Ninety cases of small-pox are under treatment at Rawmarsh, near Rotherham, and 5 at Rotherham. The Sunday and day schools at Rotherham will remain closed for some time. Some patients have been sent to Sheffield for treatment, owing to want of accommodation. Derby small-pox hospital is full of patients, and the medical officer has issued a warning to the public of the danger of the disease spreading. The chairman of the health committee reports that the disease has reached epidemic proportions, and has cost the town thousands of pounds in the past year; 40 patients were taken to hospital in Christmas week.

GRESHAM LECTURES.—Sir Robert Armstrong-Jones is to deliver lectures in Physic at the Gresham College, Basinghall-street, London, on Jan. 20th and the two following days. The lectures founded by Sir Thomas Gresham are free to the public and no tickets are required.

ARMY OFFICER AND CITY CORPORATION.—Colonel R. J. Blackham, C.B., D.S.O., M.I., has been elected a member of the Court of Common Council of the City of London. There was a contest for the representatives of the Ward of Farringdon Without on St. Thomas's Day, and Colonel Blackham was second from the top of the poll. He is, we believe, the first retired officer of the regular Army Medical Service to become a member of the City Corporation.

AN ANCIENT SALOPIAN CUSTOM.—The 179th anniversary service of the Royal Salop Infirmary took place at Shrewsbury on Jan. 3rd. On this occasion the collection is made by two men and two women plate-holders. The men were described of old as "two gentlemen of distinguished rank and fortune," and the ladies are usually the latest bride of the "county" and a débutante at the Shrewsbury Hunt Ball, which takes place at about the same time. Formerly they wore their ball-dresses and the men their hunt uniform, but these customs have fallen into disuse.

THE LATE DR. D. A. O'SULLIVAN.—Daniel Aloysius Sullivan, M.D., who died at his house at Bath on Dec. 30th at the age of 82, qualified as L.R.C.S.Irel. in 1869 and L.R.C.P. Edin. and L.M. in 1873. After studying at the Catholic University, Dublin, where in 1868 he gained the gold medal for materia medica, medical jurisprudence, and practical chemistry, he practised in Cork, Burnley, Southport, and London. The degree of M.D. (hon. causâ) was conferred on him by the National University of Ireland. Dr. O'Sullivan was for many years a member of the Central Council and a vice-president of the Lancashire and Cheshire Branch of the British Medical Association.

ROYAL SUSSEX COUNTY HOSPITAL.—The John Howard wards, comprising 20 beds for the reception of patients who are charged not less than £3 and not more than £1 per week, have proved of considerable benefit to the class of patients for whom they were intended, as well as a lucrative source for the institution at Brighton. The two-year agreement between the trustees of the late Sir John Howard and the governors of the hospital, whereby the trustees undertook to pay to the hospital a sum of £2000 a year over and above the fees which the hospital was authorised to charge the patients, has expired, and the trustees are anxious to terminate their responsibilities. They have come to the conclusion that a trust of a permanent nature should be created, and that they are not justified in continuing to pay to the hospital so large an annual sum as £2000. An agreement has been reached whereby a capital sum of not less than £22,000 is to be transferred by the trustees to the Official Trustee of Charitable Funds to be held in trust for the Royal Sussex County Hospital. The income therefrom will be paid to the John Howard Trust Committee towards the permanent maintenance and upkeep of the present John Howard wards.

PROVISION FOR NON-PULMONARY TUBERCULOSIS IN LANCASHIRE.—The Lancashire County Council some time ago purchased Wrightington Hall, the uses to which the Hall and the estate was to be put being referred for consideration to the County Tuberculosis Committee, and a sub-committee has been discussing a report by Dr. G. Lissant Cox. At present there is no accommodation available for patients suffering from pulmonary and non-pulmonary tuberculosis combined, and more especially for the non-pulmonary condition. Such cases are not taken to pulmonary hospitals nor are they admitted to general hospitals. An institution with an up-to-date light installation would, it is thought, cure the patients suitable for this special form of treatment more quickly than do the methods at present in use. The whole of the accommodation required for the treatment of non-pulmonary cases—adults and children—could be, it is said, provided on the Wrightington Hall estate; and, in addition, 80 beds for adults and 146 for children suffering from combined pulmonary and non-pulmonary tuberlosis. Of these 226 beds, 110 would be replacements and 116 would be additional accommodation. Calculating the maintenance charge at £2 10s. per week, these additional 116 beds would entail a new gross expenditure of £15,080 per annum. After certain deductions from this amount, the cost would be about one-sixth of a penny on the rates. The Government grant of £180 per bed would be available for accommodation provided at Wrightington.

ROYAL INFIRMARY, EDINBURGH.—The annual report describes progress in the development of the radiological department and a reduction in the waiting-list, but states that the problem of better accommodation for nurses is still unsolved and is probably insoluble without the acquisition of more ground. The total number of patients treated in the year ending last September was 15,755, and the average time each patient was treated was 20·6 days. The average waiting-list for admission was 1932, and 55,346 cases were treated in the out-patient department. The ordinary expenditure was £127,750, and the cost per occupied bed is estimated at £141.

Messrs. W. Heffer and Sons, Ltd., Cambridge, hope to publish in February the seventh edition of Mr. S. W. Cole's "Practical Physiological Chemistry." This edition has been considerably revised and enlarged, and two new chapters on biological oxidations and reductions and on the analysis of blood have been added.—Amongst the publications announced by Mr. Henry Kimpton, High Holborn, London, W.C. 1, are "Bacterial Infection: with special reference to Dental Practice," by Prof. J. L. T. Appleton, of the University of Pennsylvania; "The Therapy of Puerperal Fever," by Dr. Robert Kochler, of Vienna; "A Text-book of Physiology" (second edition), by Prof. W. D. Zoethout, of the Chicago College of Dental Surgery; "Asthma and its Radical Treatment" (second edition), by Dr. James Adam; "A Descriptive Atlas of Visceral Radiograms," by Mr. A. P. Bertwhistle and Mr. E. W. H. Shenton; and "An Introduction to Clinical Perimetry," by Mr. H. M. Traquair.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

THURSDAY, Jan. 14th.—4.30 P.M.—*The following papers will be read:*—Leonard Hill and Y. Azuma: Effects of Ultra-Violet Radiation upon Involuntary Muscle and the Supposed Physiological Interference of Visible Rays. I. de B. Daly: A Closed Circuit Heart Lung Preparation. Effect of Alterations in the Peripheral Resistance and in the Capacity of the Circulation. (Communicated by Prof. E. H. Starling.) *Papers to be read in title only:* T. S. P. Strangeways and Honor B. Fell: Experimental Studies on the Differentiation of Embryonic Tissues growing in vivo and in vitro. I. The Development of the Undifferentiated Limb-bud (*a*) When Subcutaneously Grafted into the Post-Embryonic Chick, and (*b*) When Cultivated in vitro. (Communicated by Sir William Hardy.) C. N. Long: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part XIV. The Relation in Man between the Oxygen Intake during Exercise and the Lactic Acid Content of the Muscles. (Communicated by Prof. A. V. Hill.) K. F. Hetzel and C. N. Long: The Metabolism of the Diabetic Individual during and after Muscular Exercise. (Communicated by Prof. A. V. Hill.) W. G. Millar: The Diffraction Method of Measuring the Diameter of Erythrocytes. (Communicated by Sir E. Sharpey Schafer.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Jan. 12th.

THERAPEUTICS AND PHARMACOLOGY } at 5 P.M.
MEDICINE }

Discussion:
The Treatment of Pulmonary Tuberculosis with Sanocrysin.

Openers:
Prof. Elliott and Prof. Cummins.
The following have promised to contribute: Prof. Fraser, Dr. Tattersall, Dr. G. Marshall, and Prof. Murray Lyon.

PSYCHIATRY: at 8.30 P.M.

Paper:
Dr. R. M. Stewart: The Problems of the Mongol.

Wednesday, Jan. 13th.

SURGERY: SUBSECTION OF PROCTOLOGY: at 5.30 P.M.

Paper:
Dr. Cuthbert Dukes: Simple Tumours of the Large Intestine and their Relation to Cancer.
A discussion will follow in which Sir John Bland-Sutton, Sir Lenthal Cheatle, Dr. Archibald Leitch, Dr. G. Marshall Findlay, Mr. Lockhart-Mummery, and others will take part.
A demonstration of specimens and microscopic preparations will be on view after 4.30 P.M.

PATHOLOGY: Members of the Section of Pathology are specially invited to attend this meeting.

Thursday, Jan. 14th.

NEUROLOGY:
Clinical Meeting at the Hospital for Epilepsy and Paralysis, Maida Vale, at 8 P.M.

Friday, Jan. 15th.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Papers:
Dr. Justina Wilson: Treatment of Lupus by Ultra-Violet Light from Mercury-vapour Arc.
Dr. J. F. Brailsford: The X Ray Diagnosis of Animal Parasites (Helminths) found in Man.
Dr. J. R. Parry: Œsophageal Conditions.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Jan. 11th.—8 P.M., Pathological Evening. Exhibition of Specimens and Skiagrams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 11th, to FRIDAY, Jan. 15th.—BETHLEM ROYAL HOSPITAL, S.E. Lecture-demonstrations in Psychological Medicine at 11 A.M. Tues. and Sat., Dr. Porter Phillips and Dr. Thomas Beaton: The Psychoses.—NORTH-EASTERN FEVER HOSPITAL, St. Ann's-road, Tottenham. Wed., 2.30 P.M., Sat., 11 A.M., Dr. Frederic Thomson: Demonstration in the Diagnosis and Treatment of the Acute Infectious Diseases.—ST. MARK'S HOSPITAL, City-road, E.C. Mon., 5 P.M., Mr. Lockhart-Mummery: Special Clinical Demonstration.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Special Course in Nervous Diseases. Mon., Dr. Yealland: Hemiplegia and Paraplegia. Tues., Dr. Hildred Carlill: Lesions of the Peripheral Nerves. Wed., Mr. Rea: Ocular Manifestations of Nervous Disease. Thurs., Dr. Yealland: Disseminated Sclerosis. Fri., Dr. Worster-Drought: Clinical Forms of Neuro-Syphilis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Intensive Course: Daily, 10.30 A.M. to 1 P.M., Demonstration of Clinical Methods. 2 P.M. to 4 P.M., Selected Cases and General Hospital Work. 4.30 P.M., Clinical Lectures.
MONDAY, Jan 11th.—Dr. Eric Pritchard: Principles of Nutrition.
TUESDAY.—Dr. F. G. Crookshank: Diseases of the Mediastinum.
WEDNESDAY.—Dr. A. E. Giles: Endocrines in Gynæcology.
THURSDAY.—Dr. C. E. Sundell: Feverish Attacks in Childhood.
FRIDAY.—Mr. H. W. Carson: Hæmatemesis.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
THURSDAY, Jan. 14th.—5 P.M., Mr. A. W. Bourne: Maternal Mortality.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.
WEDNESDAY, Jan. 13th.—Dr. Harrison: Urinary Deposits, Calculi and Concretions.
THURSDAY.—4 P.M., Dr. Frew: Enuresis.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicestersquare, W.C.
TUESDAY, Jan. 12th.—5 P.M., Dr. Haldin-Davis: Pruritus. Prurigo. Lichenification.
THURSDAY.—5 P.M., Dr. H. G. Adamson: The Erythemata.

ROYAL INFIRMARY, Sheffield.
FRIDAY, Jan. 15th.—3.30 P.M., Dr. Rupert Hallam: The Differential Diagnosis of Small-pox and other Skin Diseases.
Demonstration of Some Common Skin Diseases.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE.
FRIDAY, Jan. 15th.—4.30 P.M. (at Whitworth-street West Branch), Dr. J. F. Ward: Examination of the Chest in Children.

Appointments.

ALDRED, CHARLES N., M.B., Ch.B. Manch., has been appointed Casualty House Surgeon, Salford Royal Hospital.

ASH, E. BAYLIS, M.B., Ch.B. Birm., M.R.C.P. Lond., Honorary Assistant Physician to the Birmingham and Midland Skin Hospital.

CRITCHLEY, ELIZABETH E., M.B., Ch.B. Edin., Assistant Medical Officer of Health, Preston.

GEBBIE, N., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health, Stockport.

PASSEY, R. D., M.B., B.S. Lond., Lecturer at the Welsh National School of Medicine, Cardiff.

THOMAS, D. E., M.R.C.S., L.R.C.P., House Surgeon at the Carnarvonshire and Anglesey Infirmary, Bangor.

WEAVER, R., M.B., B.Ch. Belf., D.P.H., Medical Officer and School Medical Officer, Tipton District Council.

St. Andrew's Hospital, Dollis-hill, London, N.W.: HILL, N., M.D. Lond., Honorary Assistant Physician; MCCULLAGH, W. McK. H., M.B., B.Ch. Belf., F.R.C.S. Eng., Honorary Assistant Gynæcologist.

Certifying Surgeons under the Factory and Workshop Acts: FARMER, M. L., M.B., Ch.B. Liverp., Croston, Lancs; COX, R., M.B., B.Ch. Camb., Yeovil; FINDLAY, J., M.B., Ch.B. Aberd., Peterhead, Aberdeen.

Vacancies.

For further information refer to the advertisement columns.

Barrow-in-Furness County Borough.—Asst. M.O.H. and Asst Tub. O. £600.
Birmingham General Hospital.—Med. Reg. and Res. M.O. £155.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Canterbury, Kent and Canterbury Hospital.—Hon. S.
Colchester, Severalls Mental Hospital.—Asst. M.O. Locum Tenens. 7 guineas weekly.
Derby County Borough.—Asst. M.O. £600.
Derbyshire Royal Infirmary, Derby.—Ophth. H.S. £200.
Hatton, Warwick County Mental Hospital.—Jun. Asst. M.O. £250.
Herefordshire General Hospital.—H.S. Also Second Resident. £150 and £100 respectively.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50.
Ilford Urban District Council.—Chief Asst. M.O.H. £700.
Kent Education Committee, School Medical Service.—Dentist. £500.
Lambeth Parish Board of Guardians.—Public Vaccinator.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Lenham Sanatorium.—Asst. M.O. £400.
Lincoln County Hospital.—Sen. H.S. At rate of £200.
London Fever Hospital, Islington, N.—Sen. Res. M.O. £500.
London Lock Hospital, 283, Harrow-road, W., and 91, Dean-street, W.—Hon. Surg. to Out-patients. Also Hon. P.
Macclesfield General Infirmary.—Second H.S. £150.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
Metropolitan Asylums Board Infectious Hospitals Service.—Med. Supt. £900.
Metropolitan Hospital, Kingsland-road, E.—Asst. P.
Middlesex County Council Sanatorium, Harefield.—Third Asst. Res. M.O. £400.
Middlesex Hospital Medical School, Dept. of Physiology.—Research Asst. £250.
Nottingham, Bagthorpe Institution and Infirmary.—Asst. Res. M.O. At rate of £300.
Oswestry, Shropshire Orthopædic Hospital.—H.S. £200.
St. Andrew's Hospital, Devons-road, Bow, E.—Med. Supt. £700.
St. Helens Hospital, Lancashire.—Res. M.O. £250.
Shanghai Municipal Council, Public Health Dept.—Asst. Health O. Tls.700 per mensem.
Sheffield, South Yorkshire Mental Hospital.—M.O. £400.
Southport Convalescent Hospital and Sea-Bathing Infirmary.—Res. Med. Supt. £600.
Sudan Medical Service.—Four M.O.'s £E.720.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100.
West London Hospital, Hammersmith-road, W.—Hon. Obstet. Reg.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacancies for Certifying Factory Surgeons at Ryde, Isle of Wight; Rothwell, Yorks, West Riding; Alton, Hants; and at Tetbury, Glos.

Births, Marriages, and Deaths.

BIRTHS.

HIBBINS.—On Dec. 31st, 1925, at "Restholme," Bexhill-on-Sea, the wife of W. R. Hibbins, L.D.S., of a daughter.

STUART-WEBB.—On Jan. 4th, at Sussex House, Sutherland-avenue, W., the wife of R. E. Stuart-Webb, M.B., of a son.

MARRIAGES.

GROSS—MACDONALD.—On Dec. 29th, 1925, at Holy Trinity, Brompton, William Stovell Gross, M.D., M.R.C.P., to Mrs. Dorothy Francesca Macdonald, daughter of the late Harold Holden-White.

DEATHS.

DODD.—On Dec. 27th, 1925, at a nursing home in London, Brevet Colonel Anthony Dodd, late R.A.M.C., of Windycroft, Instow, N. Devon.

HALLOWS.—On Dec. 29th, 1925, at his residence, Hall-gate, Doncaster, Harry Pinnington Hallows, M.D. Edin., F.R.C.S., Knight of Grace, Order of St. John of Jerusalem, aged 68.

HAMPSON.—On Jan. 1st, at his residence, Royal-crescent, Holland Park, W., William Hampson, L.M.S.S.A. Lond. (formerly of West Rock Ferry).

HARCOURT.—On Dec. 29th, 1925, suddenly, at St. Thomas's Hospital, John Charles Harcourt, M.B., D.P.H., aged 53 years.

KENT.—On Nov. 24th, 1925, at Tongshan, North China, Hugh Braund Kent, F.R.C.S. Eng., M.S. Lond., fourth son of Horace Kent, Barrister-at-Law, and dearly loved husband of Margaret Kent, aged 43 years.

MILLS.—On Dec. 28th, 1925, at Riverdale-road, Sheffield, Lieut.-Colonel Bernard Langley Mills, M.D., F.R.S.E., R.A.M.C. (retd.)

MOORE.—On Dec. 28th, 1925, at Elmside, Steyning, Sussex, Dr. Frederick Hone Moore.

O'SULLIVAN.—On Dec. 30th, 1925, at his residence, Glencairn House, Bathwick, Bath, Daniel Aloysius O'Sullivan, M.D., Catholic University, Dublin, late of Cork and Burnley, aged 82 years.

WINSTANLEY.—On Dec. 31st, 1925, suddenly, at his residence, Half Moon House, Haslemere, Robert Wyndham Winstanley, M.R.C.S., L.R.C.P., L.S.A., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HISTORY OF ANTHRAX IN THE WOOL INDUSTRY OF BRADFORD, AND OF ITS CONTROL.

BY F. W. EURICH, M.D. EDIN.,

SENIOR HONORARY PHYSICIAN, ROYAL INFIRMARY, BRADFORD; PROFESSOR OF FORENSIC MEDICINE, UNIVERSITY OF LEEDS; AND FORMERLY BACTERIOLOGIST TO THE LATE ANTHRAX INVESTIGATION BOARD FOR BRADFORD AND DISTRICT.

(*Concluded from p. 53.*)

[IN the earlier part of this paper Dr. Eurich told the story of the discovery of the cause of woolsorters' disease and of the early measures taken for its prevention up to the issue of the Home Office regulation in February, 1897. The four illustrations which now accompany the conclusion of the story show the various processes of wool-sorting in which infection may occur.]

The statutory regulations of 1897 having been tried for eight years without any consequent effect upon the incidence of anthrax, a revision of wool-sorting and wool-combing rules was deemed necessary. These revised rules, in force to-day—with certain additions, the outcome of the work of later years—were published in December, 1905. During the discussions at the meetings of the joint committee of representatives of the Bradford Chamber of Commerce and the Operatives Associations, it was suggested that a committee should be formed "for the purpose of determining more precisely the classes of wool and hair in connexion with which the danger of anthrax arises, and to consider further means of prevention." This proposal was accepted and so, under the auspices of the Chamber of Commerce, with the coöperation of the Home Office, the Anthrax Investigation Board for Bradford and District came into being, and I was asked to conduct the medical and bacteriological parts of its work.

Culture of the Bacillus.

The area over which the investigations were to extend was at first restricted to the worsted industry of the West Riding comprising Bradford, Keighley, Bingley, Queensbury, &c. Batley, Dewsbury, and Mirfield were included later. So the work began. I do not know whether you can realise

FIG. 1.

Opening of bale of wool.

with what consternation I looked upon the hundreds of bales, each weighing 3 cwt. or more, which filled the warehouses of the mills to which the chairman took me. Where was I to begin, and what method should I adopt? Fortunately for me the question was decided for me, hand-samples being sent to me by various firms in connexion with cases of anthrax, which were at just that time of almost weekly occurrence. Anthrax had not previously been cultivated from wool and hair, the few positive results which had been obtained elsewhere than in Bradford having been the outcome of inoculation experiments. Such a method was impracticable here. In the first place, the health committee would not allow its premises to be licensed for vivisection, so that all inoculations had to be carried out by me in the pathological department at Leeds. Secondly, so numerous were the samples to be tested that a small menagerie would have been needed to harbour the animals, and the sacrifice of animal life would have been too great.

"You won't find anthrax in the raw material," Bell said to me, when I mentioned the problem to him; and I think it was more by good luck than good management that I succeeded—during the first year—in isolating anthrax bacilli from two samples of Persian wool and from one sample of dust from Persian wool out of a total of 123 samples. The prime difficulty was this: Anthrax colonies upon gelatine or agar are said to be typical, being composed of masses of curling filaments resembling a barrister's wig; this description is certainly an apt one, but the appearance is not typical, and I soon found that other dust organisms will grow so fast upon agar and may form so dense and widespread a pellicle on its surface that the colonies of anthrax are crowded out or covered by them.

After a variety of experiments, with the details of which I will not weary you, I found that the most characteristic

FIG. 2.

Opening the fleeces.

form of anthrax colony is obtained by cultivating the bacillus within the agar jelly, not on its surface. By adding a wash from the sample of hair to a sufficiency of melted agar (about 9 c.cm. to a plate 4 in. in diameter is a workable quantity) the majority of organisms present will be scattered below the surface and the resulting colonies will remain small and fairly well distinct from each other. A deep anthrax colony, seen with the naked eye or a pocket-lens, is not unlike the tell-tale filaments seen in the urine from a case of gleet, and with higher magnification resolves itself into a tangle of knotted strands. Applying this method of cultivation to washes made from wool and hair some surprising results were obtained.

Recognition of Contaminated Hides.

It had hitherto been supposed that the dirtier and the more offensive the wool, the greater the danger. This is erroneous. Wool and mohair washed beautifully clean, and of silky lustre, may yet have retained their deadly properties. This explains the occurrence of anthrax among those who manipulate wool in processes subsequent to washing. The fact that the anthrax bacillus was often obtained from these clean samples in almost pure culture suggested the existence of a hitherto unconsidered factor in the infection of the raw material. This factor is the blood of the animal, be it derived direct from the blood-stream or from blood-stained discharges. It is the adhesive property of the blood which is of the greatest importance; soil and excrement are easily removed from the fleece in its rapid passage through the wash-bowl, but the dried serum will adhere and with it the anthrax spores.

An interesting fact is worth recording. I found on one occasion that a 5 g. sample of mohair containing more than 100,000 aerobic organisms contained, after washing and drying, only a few hundred, yet the number of anthrax colonies remained relatively high, thus illustrating the tenacity with which blood serum adheres to the material. Furthermore, hairs and soil become glued together to form hard, compact, brittle masses very difficult to penetrate by water and by disinfectants.

Bearing these facts in mind we can understand why the wool-sorting and wool-combing regulations have failed to do more than offer some measure of protection to the sorters. The instruction to remove all damaged and "fallen" fleeces—i.e., fleeces taken from the dead animal—can be effective only if the opener or sorter knows their distinguishing characters. As a matter of fact, not a single opener or sorter possessed this knowledge prior to 1908. A fleece was considered to be a fallen one when of a peculiar dead lack-lustre appearance, an appearance due to prolonged exposure after death. The longer the exposure the more advanced

will be the decomposition of the carcass; but as the bacillus of anthrax perishes as putrefaction advances the so-called fallen fleece will be less dangerous the more characteristic its appearances are.

As for the steeping of bales, its futility from the point of view of the carder and comber is sufficiently obvious, the wool being dry again when it comes to his hands, while fans will remove only the loose dust, leaving the dry serum adhering to the fibre. The inefficacy of washing has already been dealt with.

The regulation demanding the exclusion of fallen fleeces had therefore to apply to all blood-stained material, even though some of it may have been derived from healthy animals. Such a precaution had, of course, its limitations. It was soon found that anthrax colonies could be obtained

FIG. 3.

Sorting wool.

from wool and hair, sometimes even in large numbers, on which no trace of blood could be seen. On inquiry it was found that these wools had either been fellmongered, or had, like East Indian wools, been washed in the country of export—i.e., the danger-signal had been removed while this infection remained and had in all probability spread to fleeces previously sound. It is, however, only fair to state that in a few instances anthrax bacilli were cultivated from wool which showed no evidence of contact with water.

Nature and Source of Infected Goods.

What wool and hair have been found infected? The samples examined by me number close upon 14,000. They comprise alpaca, mohair from Turkey, Lake Van, and the Cape; Persian wools, Egyptian, Syrian, and Cape wools; East Indian wool and East Indian goat-hair; goat-hair from Tunis and other parts of the Mediterranean; cashmere; Chinese goat-hair, Chinese camel-hair, and Russian camel-hair, besides occasional samples of English, Scotch, Australian, and South American wools. To work out a list in the order of danger is very difficult, the degree of infectivity of these materials varying in different years even when imported from countries in which anthrax is endemic. I have sometimes found only a small percentage infected, at another a vastly greater number. Thus on one occasion I found 11 out of 13 samples of Turkey mohair tainted; on another, of 78 samples of Cape skin mohair, 42 were infected. Taking all in all, I think that East Indian goat-hair is an easy first with approximately 30 per cent. positive results, closely followed by East Indian cashmere and Egyptian wool; then follow Persian wool, East Indian wool, and mohair. In addition we must consider Syrian wool, Tunisian and Mediterranean wool, and Chinese wool and goat-hair and alpaca dangerous. How can all these raw materials be rendered innocuous? That was the remaining problem which the Anthrax Board set itself.

Methods of Disinfection.

Would that the problem had been as easy as it was imagined to be by a dear old fellow who invaded my laboratory one afternoon to explain to me his method. "It's very simple," he said, "to kill the anthrax insects; just pass the wool between heavy iron rollers and squash the beggars." Heat, wet or dry, was found useless, as was expected; if high enough to kill the spores it also damaged the wool irretrievably. We were therefore thrown back upon chemical disinfection. A disinfectant to be commercially possible has to fulfil three requirements: (1) it must kill all anthrax in all wool or hair; (2) it must not be noxious to the workers; and (3) it must be economical both of time and money. Of all the disinfectants tried only one—viz., formaldehyde—answered these requirements. It was found that a 2 per cent. solution would, at a temperature of 100° F. kill naked anthrax spores in 30–35 minutes. Two factors, however, militated against its success in practice. In the first place minute quantities of air caught between the wool fibres would tend to prevent the solution from reaching all parts of the material treated. Secondly, formaldehyde will harden the albuminous constituents of blood clots, and this hardening of the outer parts of the clot will naturally impede penetration. Rough tests had previously shown that formaldehyde does not seriously interfere with either the spinning or the dyeing property of wool; nor did it seem likely that the irritant properties of formalin would prove an obstacle difficult to overcome.

At this point a second investigating body took up the problem of disinfection. In November, 1913, a Departmental Committee had been appointed by the Home Office to inquire into the dangers from infection by anthrax in the processes of wool-sorting, wool-combing, &c., and to consider and report whether any, and if so what, amendments were desirable in the regulations for these processes. This Committee, of which I was a member, came to the conclusion that no amendments to the regulations were likely to affect the incidence of the disease, and so, going beyond its terms of reference, it appointed a small subcommittee to consider the problem of disinfection. The secretary to the Committee and of its subcommittee was one of H.M. Inspectors of Factories, Mr. Elmhirst Duckering. It is not too much to say that it is due to his energy and practical genius that the difficulties mentioned have been overcome. As a member of the subcommittee I enjoyed the inestimable advantage of working with him, the experiments being left in his hands and in mine. The report of this subcommittee is published separately as a Blue-book, and fills 92 closely-printed folio pages. The experiments were carried out with both naturally infected material—viz., clots from Persian fleeces and with artificial clots. 149 experiments were made. The difficulties were finally overcome by the adoption of three devices: (1) In order to gelatinise and soften the clots the opened wool is passed through warm water to which alkali has been added and then through a further bath containing soap. (2) To ensure that minute air

FIG. 4.

Feeding the willey machine.

bubbles may not be retained in the meshes of the wool, and in order to break up the softened clots as much as possible the wool is squeezed between rollers in its passage from one bath to the next, and this process is repeated as the wool passes into the formaldehyde bath—which is enclosed in a chamber. (3) The third device consists in drying the wool, which again passes between a set of rollers as it emerges from the formaldehyde bath to travel upon a moving lattice to the drying chamber.

Advantages of Formalin.

Here we may note the use to which a common cold may be put. Mr. Duckering caught a cold; in order to cut it short he poured some formalin upon his handkerchief on going to bed. He was astonished to find on the following morning that though the handkerchief was dry the odour of formaldehyde was still distinctly perceptible. This gave

him an idea, and it was found by experiment that formalin would continue to penetrate the remains of blood-clots after removal of these from the bath and that, when the dried wool has been stored for two, or at most three days, the formalin will have done its work, even the most resistive spores being killed. Over 1500 control tests carried out by three independent examiners—by our city bacteriologist, in the Liverpool Public Health Laboratory, and by myself—have shown that the method is effective and reliable. The Government disinfecting station in Liverpool is the result. It is at present the only one in the kingdom and is still regarded as a trial station. But the work it does is great; 1500 lb. of wool can be disinfected in an hour—i.e., the present plant is capable of disinfecting about 10–12,000,000 lb. of wool and hair per annum if kept fully employed.

The Anthrax Prevention Act provides that an Order in Council may prohibit the importation of dangerous material except on the condition that it is disinfected in the Government wool disinfecting station. Up to the present such an Order in Council has been made to apply to two materials only—viz.: (1) to wool and hair imported from or through Egypt, and (2) to goat-hair imported from or through India. The present total import of these two classes of material is about 2,000,000 lb. yearly, while about another 500,000 lb. of wool is sent voluntarily to the station for disinfection. As, however, about 20,000,000 lb. of scheduled or black-listed raw material are imported into this country annually it follows that cases of anthrax will continue to occur until all dangerous wool is sterilised or until effective precautions are taken in the country of origin.

One reason for the reluctance of manufacturers to make use of the Liverpool disinfecting station voluntarily is the cost of the process. The cost of disinfection—which is chargeable to the owner of the wool—varies from 1*d.* to 1½*d.* per pound, and may be lowered still further when means for the recovery of formaldehyde shall have been completed. The cost is a small one, but competition is keen, and even an additional 1*d.* per pound on the cost of production may hamper our manufacturers in the world-market.

International coöperation is called for and has indeed been discussed by the League of Nations, hitherto, unfortunately, without success.

The pebble which Bell cast into the water has raised a wave that has travelled and is being felt even in distant China and Peru. Let us trust that the principle which guided him throughout his professional life will be shared by the Governments concerned, and that the relief and prevention of suffering, even if it affect but the few, will in the end prevail over subsidiary considerations.

THE TROUBLESOME CHILD.

UNDER the auspices of the Jewish Health Organisation, Dr. A. R. Abelson delivered, on Dec. 26th, at the Whitechapel Art Gallery, London, an address on delinquent children.

Although much progress has been made, he said, the existing system for reforming wrong-doers leaves a great deal to be desired. Wrong-doing is largely bound up with morbid conditions of mind and body, and not everyone is given full power to discern between right and wrong. An important percentage of delinquents are mentally defective, and hence, as a rule, morally deficient; but probably a still larger number are suffering from functional nervous disturbances for which psychological treatment can effect considerable improvement, especially where the moral instability goes hand in hand with what is generally termed a neurotic constitution. These children are often sensitive to good influence, and under ordinary circumstances they are well disposed. Physical disorders must also be taken into serious consideration and receive treatment. After encephalitis lethargica, for instance, a child hitherto extremely well-behaved and tractable may develop alarming immoral behaviour. Such conditions as tuberculosis and heart disease are also capable of causing moral upheaval leading to vice and immorality.

The "Naughty Child."

A large number of children often spoken of as fidgety, restless, and inattentive at school are suffering from minor nervous disorders. Teachers can frequently testify to the improvement brought about by removal or cure of diseased tonsils or by the correction of defective vision or hearing. All human beings are potential delinquents. "Surely there is not a righteous man on earth who doeth good and sinneth not" was wisely said by the preacher of old. It is for us to find out the causes of wrong-doing and how it can be remedied, and still more important how it can be prevented. Mr. Clarke Hall, magistrate of the Children's Court at Old-street, strongly emphasises the amazing number of young people committing offences, often serious and repeated, who are never brought before a court, either because they are so cunning in concealing their repeated offences or through the reluctance of their parents to expose unpleasant misdeeds. These cases alone show the crying need for some institution where parents who are in trouble can come for advice about their children, which can be given in the strictest confidence without the danger of exposure. A parent who has a nervous child—perhaps a well-behaved child who sleeps badly or has a morbid terror of the dark—could also come there for advice and save considerable heartweariness in years to come. And it is much more necessary to have some such institution where parents can bring their delinquent children before public disgrace has occurred. The common way of attempting to cure children of nervousness and other peculiar weaknesses by shouting, laughing at them, and by making them appear foolish is strongly to be deprecated. It only aggravates evils which require kind treatment and sympathetic help. Strict and narrow upbringing may lead from lying and deceit to hypocrisy and secret consorting with morally unhealthy companions; from tacit disobedience to open rebellion. Wrong-doing is merely a symptom, and as such it cannot be spoken of as being inherited; but criminal acts are more likely to arise where the soil is favourable, and more criminality may be expected in stocks which produce mental defectives or show other signs of marked abnormality than in normal families.

Environment and Family.

Improvement of environment is bound to decrease the amount of delinquency by reducing facilities in our crowded towns for immorality and vice. Homeless young people who are out of work, and even those who are in work, should be able to go to hostels if stranded. Parent and child should alike be educated to meet the problems and dangers of life intelligently. Spoiling and pampering of the eldest child, the only child, or the youngest child, leads to nervous disturbance besides disobedience, bad temper, conceit, and selfishness. Favouritism induces jealousy and resentment in the other members of the family, and unjust accusation may lead to lifelong unpleasant memories. The child, especially, who is inclined to imagine that he is unjustly treated by parents or teachers, requires more careful handling than the average parent—and in particular the tired and harassed mother of a large family in conditions of poverty—is capable of bestowing. Yet the real difficulty is not so much in the external and obvious defects of the home, such as poverty and neglect, as in the inner complicated tangle of habits, attitudes, and reactions that have grown up in the minds of the more active inmates.

In the past, said Dr. Abelson, the Jews have played an important part in the fight for humane and rational treatment of the erring child. The Jewish industrial schools and reformatory can produce an excellent record of achievement. Further progress, however, lies in the provision of greater scope to medical men and psychologists and in substituting the atmosphere and methods of the clinic for those of the court and prison.

HEALTH OF PALESTINE UNDER THE MANDATE.

IN the report for 1924 on the administration under mandate of Palestine, the following references are made to health matters. The year was marked by a notable advance in the control of malaria and trachoma; by a beginning in pilgrim quarantine on the Hejaz and Sinai railways; and by the extension of the movement for municipal participation in the conduct and cost of local hospitals. Save in Jerusalem, Tulkarem, Acre, and Haifa the end of the year saw local hospital committees everywhere constituted to direct at their own charge the non-technical services of the hospitals founded and hitherto entirely maintained by Government. Measles is again responsible for a higher death-rate; little can be done to prevent the spread of this disease or to provide medical and nursing aid. Typhoid, typhus, and dysentery affected only the Jewish population, but with low incidence. In the Metullah salient, before general vaccination could be practised, there was an outbreak of small-pox with 17 cases among an isolated Bedu tribe. Four cases occurred in Jaffa among Yemenite immigrants. 54,061 persons were vaccinated by medical officers. Malaria is progressively less prevalent, as is indicated by the percentage of dispensary patients treated for the disease: in 1922 this was 7·2 per cent., in 1923 4·9 per cent., and in 1924 3·8 per cent. In nine months of 1918 118 persons died in Jerusalem from malaria; in 1924 only two. Acute conjunctivitis was rife in 1924. Of 12 projected Government ophthalmic clinics to operate by the generous arrangement of the Order of St. John under the supervision of the Warden and the British Ophthalmic Hospital, Jerusalem, those in Nablus, Ramleh, Gaza, and Beersheba are already in existence; 50,000 school-children were kept under medical observation for trachoma. Two cases of bubonic plague occurred in Jaffa. Acute poliomyelitis and cerebro-spinal fever were reported in two and three cases respectively; tuberculosis in 479 cases with 163 deaths; schistosomiasis in 28 cases, 21 being in Jaffa district, where this disease is endemic. There were nine cases of hydrophobia in untreated cases;

antirabic measures were energetically practised by the Departments of Health, Agriculture, and Police, and over 8000 dogs and jackals destroyed by strychnine bait in the first nine months of the year. Up to the end of October 25,352 births and 14,243 deaths had been recorded, increases of 3928 and 836 respectively over the corresponding period of 1923. Two thousand Palestinians made the pilgrimage to Mecca and 2502 Moslem pilgrims of other countries visited the holy shrines in Palestine, including some 600 who came overland. The Quarantine Board of Egypt has undertaken to establish a station at El Arish for the mutual protection of Egypt and Palestine should either country become infected. Nineteen pupil nurses passed their qualifying examination, and nine pupil midwives, trained at the Princess Mary Maternity Centre, were granted certificates. Ninety licences to practise were granted to doctors, 16 to pharmacists, 36 to dentists, and 31 to midwives. The adhesion of Palestine to the International Opium Convention was notified by His Majesty's Government in August. Twelve kilogrammes of opium, 615 of morphine, 4137 of cocaine, and 125 of heroin were imported under permit; several contraband consignments of dangerous drugs were seized. In the Government laboratories 18,000 routine examinations were made. The chemical laboratory has engaged in research relating to the recovery of potash from Dead Sea brine. 24,000 doses of antirabic vaccine were prepared and 819 persons treated. Antityphoid and anticholera vaccines have also been manufactured for use among immigrants and pilgrims.

TRAINING TEACHERS OF DEFECTIVE CHILDREN.

IN recent years many classes have been opened for dull and backward children, as well as special difficulty classes. The number of teachers with special training and qualifications is very small, and most local education authorities are obliged to choose for the work members of their school staff whom they think would be suitable. But the ordinary elementary school teacher should not be placed in charge of such a class without being given some training. The individual study of the children is necessary, and the ordinary class methods, with just a little more time given to manual work, are of very little use. The teaching of defectives is highly skilled work, demanding knowledge not included in the ordinary training college curriculum. The Central Association for Mental Welfare therefore organised last summer, with the full approval of the Board of Education, a training course, in which the needs of teachers of classes for the dull and backward and of special difficulty classes were specially catered for. The course was attended by 35 teachers, and was so successful that the Association is proposing to hold in London a similar course from May 3rd to July 3rd next, under the direction of Miss Lucy Fildes, educational organiser of the Association. It will not be in any way a substitute for the ordinary short courses organised by the Association for the Board of Education, two of which are being held this year. It is intended primarily for teachers with no previous experience of work for defective or backward children. Besides lectures on psychology and the medical aspects of the problem, opportunity will be given of observing the adaptation of ordinary methods of individual teaching to the special need of the defective child. The rôle of physical education and games in the development of the unstable and anti-social child will be carefully studied, and the best methods of grading the children will be demonstrated. Throughout the course teachers will be given chances of teaching groups of difficult children, of learning various forms of manual work, and of taking part in classes of eurhythmics. The fee will be 12 guineas and students will make their own arrangements for lodging. Applications must be sent, on a form provided, to Miss Evelyn Fox, 24, Buckingham Palace-road, London, S.W. 1, before Feb. 28th.

WIND SCREEN TROUBLE.

To the Editor of THE LANCET.

SIR,—Your motoring correspondent might have reminded his readers that any substance which lowers the surface tension of water can be applied to wind screens to banish raindrops. Bile salts are the substances par excellence which lower surface tension, but their application to the screen must needs be messy. The same objection can be raised against glycerine. For convenience, cheapness, and efficiency ordinary yellow soap is difficult to beat. It should be rubbed in irregular smears across the screen, and in a shower of rain a clear film of water, as wide as you please, soon appears. One application lasts all day. Apart from this particular use, a small cake of soap is always useful on a car. Raw potato and apple are all very well in their way, but they are not always instantly available. Any chemicals, however, applied to the screen are useless in snow or sleet.

I am, Sir, yours faithfully,

E. G. T. LIDDELL, B.M.

Trinity College, Oxford, Jan. 2nd, 1926.

ALLEGED SMOKING OF STRYCHNINE IN CHINA.

SOME months ago an article appeared in the *North China Daily News* alleging the extensive import of strychnine into China for use in drug smoking, and we have seen a more recent letter from a London firm of manufacturing chemists to Dr. W. H. Graham Aspland, of the International Anti-Opium Association, China (26, Hsi T'ang Tzu Hutung, Peking), stating that they had been shipping large quantities of strychnine nitrate (some of it labelled "for hunters' use"), but in view of disagreeable rumours as to the use to which it was being put they had decided to make no further sales to China for the present. Dr. Aspland writes of the import of 5000 ounces of strychnine salts monthly, "without the least restriction," and of the rapid increase of imported caffeine (chiefly to Shanghai and Hankow), amounting now to about 2000 lb. a month. The Chinese, he says, are mixing these alkaloids with heroin, cane-sugar, and milk-sugar in the manufacture of a pill of 4½–5 gr. in weight, the average formula being: Heroin hydrochloride 2¼ oz., strychnine nitrate ¼ oz., quinine sulphate 1 oz., caffeine 5 oz., sugar of milk 48 oz., refined sugar 16 oz., gum and water to make 10,000 pills. Dr. Aspland thinks that these pills are smoked like opium ("the new 'smoke' is more attractive"), but that the greater quantity are swallowed. Strychnine and caffeine are new to him as dope and he asks for enlightenment from pharmacologists as to the addictive effect of these drugs.

A HANDBOOK ON DRINK.

THE Year Book issued by the United Kingdom Alliance and edited by George B. Wilson is described as a temperance reformers' handbook, and contains an enormous amount of information on the problems arising out of alcoholism, and the conditions and interests which encourage the consumption of liquor. The Alliance is a "league of all good citizens whether abstainers or not, without distinction of party, sect or sex, united by a genuine desire to remove the evils of drink from the nation by removing their cause." It favours legislation to allow the people, on the widest possible franchise, to prohibit the sale of liquor in their own localities. It desires "to organise by democratic methods the wise exercise by the electorate of such power when obtained," and in the interval it is anxious to secure such general restrictions over the Liquor Trade as will in any way curtail its power and volume without entrenching it more firmly in the national life. The Year Book spends, perhaps, too much time in flogging horses generally admitted to be dead; but perhaps there are here and there owners who think there is life in them yet. And whilst it casts a proper light on the real motives of many of those who advocate an "improved public-house," it does not altogether meet the feeling of the man in the street that such places are possible and desirable. But the evidence which it does produce of national waste and inefficiency demands the fullest consideration of all those who are wondering how far personal liberty in the matter of drink should be given up to the good of the community, and the Year Book is almost indispensable for those occupied in social and political affairs. It may be obtained from the United Kingdom Alliance, 1, Victoria-street, London, S.W. 1, at the price of 2*s*.

DIATHERMY AND OTHER ELECTRICAL APPARATUS.

Messrs. Newton and Wright (electro-medical instrument makers, 72, Wigmore-street, London, W. 1) send us interesting brochures on some of their recent specialties. The Holway diathermy apparatus is designed to suit either medical or surgical work, particular attention having been paid to the design of the spark gap. This consists of an aluminium chamber extensively ribbed on the outside, so that even with a large current it does not become unduly hot. This chamber is provided with an inlet and an outlet tap for gas dielectric, and can also be arranged for use with ether in cases where no gas supply is available. The actual gap comprises a large copper disc, heavily silvered, bridging over the space between a pair of heavy copper electrodes, likewise silvered, so that the gap is in duplicate, an arrangement which conduces to a steady current, while affording means of convenient and delicate adjustment. The electrodes, which are mounted on thick mica diaphragms, are provided with radiation fins for cooling. The Universal X Ray Table (1925 model) of the same firm appears to be a good piece of engineering enabling overhead or under-table work to be carried out with adequate protection to the operator. The brochure on ultra-violet therapy gives useful information in a modest compass, and illustrates several kinds of lamps which now find extensive application.

DONCASTER ROYAL INFIRMARY.—Lord Cozens-Hardy last week opened the new ophthalmic department, which is very well arranged and equipped. The cost has already been met.